SIERRA LEONE

Annual Report

OF THE

Medical and Sanitary Department

For the Year 1932.

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Annual Report of the Medical and Sanitary Department for the year 1932.

I—Administration.

(*a*) ESTABLISHMENT INCLUDING VACANCIES, ACTING APPOINTMENTS AND PROMOTIONS.

MEDICAL AND SANITARY STAFF.

1 Director of Medical and Sanitary Services
1 Assistant Director of Health Service
1 Surgical Specialist
1 Senior Health Officer
2 Senior Medical Officers
1 Medical Officer of Health
11 Medical Officers of the West African Medical Staff
8 African Medical Officers
1 Chief Sanitary Superintendent
2 Sanitary Superintendents

EUROPEAN NURSING STAFF.

2 Senior Nursing Sisters
5 Nursing Sisters.

SUBORDINATE MEDICAL AND SANITARY STAFF.

1 Chief Dispenser
1 Assistant Chief Dispenser
10 First Class Dispensers
10 Second Class Dispensers
14 Third Class Dispensers
1 Hospital Warden
1 Chief Store-keeper
2 Assistant Store-keepers
32 Male Nurses and Apprentices
25 Female Nurses and Probationers
2 Midwives
3 Health Visitors
1 School Nurse
38 Sanitary Inspectors and Learners
1 Dispenser for Infant Welfare Clinic
1 Head Attendant, Lunatic Asylum
1 Assistant Head Attendant, Lunatic Asylum
1 Matron, Lunatic Asylum.
3 Female Attendants, Lunatic Asylum
11 Male Attendants, Lunatic Asylum
1 Laboratory Assistant.

There are in addition to the above, cooks, stokers, gate-keepers, watchmen, labourers, hospital porters, carpenter, motor ambulance driver, etc.

Clerical Staff.

There are 17 clerks—1 Chief Clerk, 1 second grade, 9 senior third grade, and 6 junior third grade.

Temporary Assistance.

Owing to the shortage of medical officers due to illness, Dr. R. D. Jones was engaged temporarily from 27th May to 3rd June, inclusive.

Principal Acting Appointments.

(*Substantive holders are given in Table 1.*)

Dr. A. B. Monks acted as Assistant Director of Health Service, from 1st January to 27th May.

Dr. W. Allan acted as Medical Officer of Health, from 1st January to 28th December.

Dr. A. B. Monks acted as Medical Officer of Health, from 29th to 31st December.

New Appointments.

Miss M. G. Morgan appointed Nursing Sister on the 6th April and arrived Freetown on the 16th April.

Dr. A. J. Johnson appointed Medical Officer on the 13th July and arrived Freetown on the 23rd July.

Miss H. F. W. Young appointed Nursing Sister on the 30th November and arrived Freetown on the 10th December.

Promotion.

Dr. E. S. Walls, Medical Officer, promoted Senior Medical Officer on the 19th May.

Transfers.

Dr. B. W. F. Wood, Senior Medical Officer, transferred to Nigeria on the 6th August.

Miss M. A. Henry, Nursing Sister, transferred to Nigeria on the 30th November.

Retirement.

Mr. G. O. S. Nylander, Head Attendant, Lunatic Asylum, retired on the 27th October.

Deaths.

It is with regret one has to announce the deaths of the following officers:—

Dr. R. F. Campbell, Medical Officer of Health, on the 1st March, in England.

Dr. G. N. Metzger, African Medical Officer, on the 28th March, in Freetown.

(*b*) LIST OF ORDINANCES, ETC., AFFECTING PUBLIC HEALTH ENACTED DURING THE YEAR.

Ordinances.

Lunatics Removal Ordinance, 1932 (No. 20 of 1932).

Dangerous Drugs Amendment Ordinance, 1932 (No. 22 of 1932).

Orders in Council.

Vaccination Order in Council, 1932 (No. 1 of 1932).

Sumbuya (Special Health Authority) Order in Council, 1932 (No. 7 of 1932).

Marampa Concessions Health Area Order in Council, 1932 (No. 10 of 1932).

Marampa Railway (Pepel) Health Area Order in Council, 1932 (No. 11 of 1932).

Public Health (Infectious Diseases) Order in Council, 1932 (No. 14 of 1932).

Rules.

Vaccination Rules, 1932 (No. 8 of 1932).

Marampa (Railway and Concessions Areas) Health Rules, 1932 (No. 12 of 1932).

(c) FINANCIAL.

The following table gives the revenue and expenditure for the years 1931 and 1932 :—

Medical Revenue.	1931. £	s.	d.	1932. £	s.	d.
Connaught Hospital receipts	211	4	7	213	14	3
European Hospital receipts	511	3	9	488	18	0
Sundry receipts (out-patients' fees, etc.)	617	19	0	743	0	4
Druggist fees (registration)		—		2	2	0
Maintenance of lunatics	290	12	1	150	0	4
Departmental fines	3	16	6	4	13	5
Total	£1,634	15	11	£1,602	8	4

Medical Expenditure.	1931. £	s.	d.	1932. £	s.	d.
Personal Emoluments	38,627	18	7	38,325	14	7
Other Charges	16,033	9	0	11,620	15	5
Total	£54,661	7	7	£49,946	10	0

Sanitary Revenue.	1931. £	s.	d.	1932. £	s.	d.
Sanitary Services	86	0	10	2	3	0
Maintenance of persons in quarantine		—		89	1	4
Total	£86	0	10	£91	4	4

Sanitary Expenditure.	1931. £	s.	d.	1932. £	s.	d.
Personal Emoluments	10,113	4	4	9,469	2	5
Other Charges	11,605	16	10	13,330	15	10
Total	£21,719	1	2	£22,799	18	3

Ratios of combined Medical and Sanitary votes to total estimated revenue for the past five years :—

Year.	£	
1928	88,365	1 : 11·07
1929	94,188	1 : 8·33
1930	97,975	1 : 7·86
1931	86,708	1 : 9·08
1932	75,407	1 : 10·80

ANALYSIS OF HOSPITAL EXPENDITURE FOR THE YEAR 1932.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Institution.	Total Number of Patients.	Daily Average Number of Patients.	Hospital Days.	Provisions from Store-keeper. Total.	Fresh Provisions. Total.	5 and 6 per Patient per Day.	Wines, Spirits, Minerals. Tobacco, Ice. Total.	8 per Patient per Day.	7 and 9 per Patient per Day.	Fuel, Light. Total.	Miscellaneous: Cleaning Materials, Hospital Equipment, Replacements.	Total of 5, 6, 8, 11 and 12.	5, 6, 8, 11 and 12 per Patient per Day.	Total Sum Recoverable from Paying Patients.
				£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Nursing Home ...	92	3·00	1,264	144 8 4¾	201 6 4	0 5 6	42 10 1	0 0 8	0 6 2	53 7 4	55 14 1¾	497 6 3½	0 7 10¼	
Connaught Hospital	2,632	100·00	36,267	640 13 2½	936 9 7½	0 0 10	26 5 5½	...	0 0 10	369 7 6	59 8 11¾	2,032 4 9¼	0 1 1¼	
Lunatic Asylum ...	144	72·60	26,759	49 8 10¼	520 3 6¼	0 0 5	25 2 6	...	0 0 5	30 0 0	26 3 6	650 18 4½	0 0 5¾	
Kissy Infirmaries ...	270	84·54	31,132	45 8 0	514 2 10¼	0 0 4¼	15 16 6	...	0 0 4¼	45 0 0	21 10 10	641 18 2¼	0 0 4¾	
Bonthe Hospital ...	400	21·61	7,919	4 14 5	90 1 2	0 0 2¾	0 12 0	...	0 0 2¾	12 17 6	0 3 6	108 8 5	0 0 3¼	10 18 6

II—Public Health.

(*a*) GENERAL REMARKS.

(*i*) General Diseases.

Apart from an extensive outbreak of smallpox which in the main affected the Protectorate of Sierra Leone, it is gratifying to be able to record that the health of Sierra Leone Colony and Protectorate during the year under review was decidedly better than that of the previous year. A general impression of this can be gained from the total number of cases treated which fell from 100,255 in 1930 to 94,759 in 1931 to 88,387 in 1932, and this notwithstanding the fact of the financial depression which, with its consequent drop in the standard of living, might have led one to expect an increase in the sick-rate, owing to a reduction of the resisting powers of the people who were now existing on a more meagre or less rich diet than that which they enjoyed in the former days of plenty.

Climatic conditions were not greatly altered from those of former years except that small amounts of rain fell continuously in those months which are usually considered to be dry months in Sierra Leone, i.e. January to March; this might have led one to anticipate an increase in the incidence of malaria, especially in the Colony, but this in fact did not occur; the rains being light with intervals of several days between showers were easily dried up by the Harmattan sun.

European Officials.—A glance at Table I will show that with but one exception the tabulated figures for 1932 are less than those in the former year. The exception lies in the average number of days sick per patient, a matter which is at the discretion of the medical officer treating the case. There were no deaths during the year, and out of the six invalidings but three are attributed to malaria.

The invaliding rate for European officials is well below the average taken over the last decennial period.

TABLE I.

Health of European Officials.

Table showing Sick, Invaliding and Death-rates of European Officials :—

———	1930.	1931.	1932.
Total number of officials resident	296	261	240
Average number resident	260	177	176
Total number on sick list	187	151	114
Total number of days on sick list	1,785	1,463	1,235
Average daily number on sick list	4·89	4·00	3·37
Percentage of daily sick to average number resident ...	1·88	2·25	1·91
Average number of days on sick list to each patient ...	9·54	9·68	10·83
Average sick time to each resident	6·86	8·26	7·01
Total number invalided	3	8	6
Percentage of invalidings to total residents	1·01	3·06	2·5
Percentage of invalidings to average number resident ...	1·15	4·51	3·40
Total number of deaths	—	1	—
Percentage of deaths to total residents	—	·38	—
Percentage of deaths to average number resident ...	—	·56	—

Causes of Invalidings and Deaths of European Officials.

Causes.	Invalided.	Died.
Dysentery	2	—
Fracture patella	1	—
Malaria	3	—
	6	—

The invaliding rate of European officials for the past ten years is shown below:—

Year.	Average Number Resident.	Total Number of Invalidings.	Percentage of Invalidings to Average Resident.
1923	102	14	13·72
1924	164	13	7·92
1925	180	5	2·77
1926	184	6	3·26
1927	250	16	6·40
1928	280	9	3·21
1929	251	11	4·38
1930	260	3	1·15
1931	177	8	4·51
1932	176	6	3·40

European Non-Officials.—Such a satisfactory state cannot be recorded in the case of the non-official European community. Invalidings were the same as in 1931 but deaths were increased by three with the consequent rise in the percentage of invaliding and percentage of deaths in non-European residents. Of the invalidings four are directly attributable to tropical residence, but of the deaths none can be so directly or definitely assigned.

Nevertheless, keeping in mind the increasing activity in mining industry and mining prospecting, both of which walks in life expose Europeans to conditions of living which cannot be considered as ideal for Europeans in the tropics, the health table of the European non-officials may be taken to be satisfactory.

TABLE II.

HEALTH OF EUROPEAN NON-OFFICIALS.

Table showing Sick, Invaliding and Death-rates of European Non-officials:—

———	1930.	1931.	1932.
Total number of non-officials resident	398	494	434
Average number resident	318	343	292
Total number on sick list	40	75	63
Percentage of sick to average number resident ...	12·57	21·86	21·57
Average number of days on sick list to each patient ...	—	—	—
Average sick time to each resident	—	—	—
Total number invalided	8	11	11
Percentage of invalidings to total residents	2·01	2·22	2·53
Percentage of invalidings to average number resident ...	2·51	3·20	3·76
Total deaths	5	3	6
Percentage of deaths to total residents	1·25	·60	1·38
Percentage of deaths to average number resident ..	1·57	·84	2·05

Causes of Invalidings and Deaths of European Non-officials:—

Causes.	Invalided.	Died.
Blackwater fever	1	—
Debility	1	—
Diphtheria	—	1
Gastric ulceration	1	—
Gored by bush cow	—	1
Hæmorrhage (cerebral)	—	1
Intestinal intussusception	1	—
Lightning	—	2
Malaria and neuritis	1	—
Motor accident	1	—
Nervous breakdown	1	—
Pneumonia	1	—
Onychia	1	—
Phlebitis	1	—
Uræmia	—	1
Sierra Leone Development Company—cause of invaliding refused	1	—
Total	11	6

African Officials.—When we come to a consideration of the health of the African officials a similar state to that observed in the case of the European officials can be discerned. Without exception the tabular statistics for 1932 were less than those for the preceding year. The average number of sick days per patient remains fairly constant, but it is gratifying to record a decrease in invalidings and deaths, and consequently in the invaliding and death-rates, notwithstanding the fact that the lack of recruitment with its consequent stationary service, bringing with it a resultant higher average age might have led one to expect an increase in constitutional diseases incidental to the later periods of life. A recorded death in a definitely diagnosed case of typhoid fever, again demonstrates a tendency of infectious diseases to exhibit atypical characteristics in Africa, as it must be considered as peculiar, that with our substitute service of conservancy, the existence of but one potable supply of water in the whole country, the general pioneer conditions still existing, that the introduction of one case of typhoid should have led one to expect many cases, and yet indeed in the whole of the Colony and Protectorate only 13 cases occurred.

TABLE III.

Health of African Officials.

Table showing Sick, Invaliding and Death-rates of African Officials:—

———	1930.	1931.	1932.
Total number of officials resident	979	920	900
Average number resident	970	884	880
Total number on sick list	1,048	959	680
Total days on sick list	9,052	7,863	5,464
Average daily number on sick list	24·8	21·54	14·92
Percentage of daily sick to average number resident ...	2·55	2·43	1·69
Average number of days on sick list to each patient ...	8·63	8·19	8·03
Average sick time to each resident	9·33	8·5	6·20
Total number invalided	12	11	4
Percentage of invalidings to total residents	1·22	1·19	·44
Percentage of invalidings to average number resident ...	1·23	1·24	·45
Total deaths	12	7	5
Percentage of deaths to total residents	·91	·76	·55
Percentage of deaths to average number resident ...	.92	·79	·56

Causes of Invalidings and Deaths of African Officials:—

Causes.	Invalided.	Died.
Cerebral hæmorrhage	—	2
Deafness	1	—
Mania	1	—
Pulmonary tuberculosis	2	2
Typhoid fever	—	1
Total	4	5

TABLE SHOWING THE COMPARATIVE FIGURES OF THE HEALTH OF AFRICAN OFFICIALS FOR THE LAST TEN YEARS.

Year.	Average Number of Officials.	Number on Sick List.	Number of Days off Duty through Sickness.	Average Sick Time to each Official.	Number Invalided.	Percentage of Invalidings to Average Number.	Total Deaths.	Percentage of Deaths to Average Number.
1923	750	879	7,586	10·11	13	1·73	7	0·93
1924	900	1,009	8,920	9·91	18	2·00	5	0·55
1925	997	1,121	8,735	8·76	18	1·80	10	1·00
1926	1,000	950	5,375	5·37	6	0·60	4	0·40
1927	1,000	933	7,919	7·91	20	2·00	4	0·40
1928	1,050	967	6,415	6·10	25	2·38	9	0·85
1929	969	1,057	7,486	7·72	8	0·83	6	0·61
1930	970	1,048	9,052	9·33	12	1·23	8	0·92
1931	884	959	7,863	8·5	11	1·24	7	0·79
1932	880	680	5,464	6·20	4	0·45	5	0·56

TABLE IV.

Health of African Troops.

Here again the year 1932 shows a most satisfactory state of affairs. The average strength was approximately the same, but there were no deaths; the total number of men on the sick list fell from 1,279 to 380 and the sick-rate from 3·4 per 1,000 to 1 per 1,000.

Royal West African Frontier Force (Non-European):—

Average Strength of Battalion in 1932.	Total Number of Deaths.	Death-rate per 1,000.	Total Number of Men on Sick List.	Sick-rate per 1,000.
370	—	—	380	1·027

TABLE V.

Health of African Police.

The statistical table in respect of health of the police does not make such good reading. A drop in the average strength, and an increase of the deaths by two have naturally led to an increase in the death-rate, and an increase in the total number of men on the sick list when taken in conjunction with the average strength naturally increases the sick-rate; but the figures are not such as to warrant one to base any conclusion, nor indeed are the fluctuations such as to cause alarm. Indeed one of the deaths was a case of *felo-de-se*.

Police.

Total Number of Men.	Total Number of Deaths.	Death-rate per 1,000.	Total Number of Men on Sick List.	Sick-rate per 1,000.
265	3	11·32	355	1·339

TABLE VI.

Health of Prisoners and Mental Patients.

A special report on these will be found in Section III—" Prisons and Asylum."

TABLE VII.

Institutional Treatment.

The tables for this year again show the patients divided into Colony and Protectorate, and on the whole are fairly constant other than that one is able to record a welcome increase in the *subsequent attendances*. The drop in the total number of Protectorate out-patients, reflecting as it does a better healthy state, should be read in conjunction with the increase in the admission of in-patients which can be taken to demonstrate an increasing readiness in the aboriginal to seek European institutional aid, rather than have recourse to the native " medicine " man; and the increase of recorded deaths in the Protectorate can easily be taken as demonstrating greater assiduity on the part of Registrars of Births and Deaths, who are now controlled by the Health Department.

——	1930.	1931.	1932.
In-Patients:			
European Colony	127	94	96
European Protectorate	...	...	1
African Colony	4,642	3,318	3,151
African Protectorate		1,457	2,112
Out-Patients:			
European Colony	511	363	641
European Protectorate		238	155
African Colony	94,975	34,312	35,734
African Protectorate		54,977	46,497
Total	100,255	94,759	88,387

Deaths.	1930.	1931.	1932.
European {Colony	5	3	1
European {Protectorate			...
African {Colony	295	248	213
African {Protectorate		49	70
Total	300	300	284
Percentage of deaths to total number treated ...	·29	·31	·32
Showing decrease or increase of total number of patients treated	−2,276	−5,496	−6,372
Subsequent attendances	227,343	239,551	263,569

The following table gives the number of diseases for the cure of which patients attended the various hospitals and dispensaries. Comparing the figures for 1932 with those for 1931 which are also good, it is interesting to notice the decrease in the following diseases: Malaria, yaws, rheumatism, dental diseases, and in the undiagnosed affections of the intestinal tract which are classed under the generic term of "Enteritis":—

Diseases.	1931.	1932.
Malaria	6,624	4,857
Yaws	7,449	5,891
Acute rheumatism	501	733
Chronic rheumatism	5,081	4,529
Diseases of the spleen	436	406
Hemiplegia	123	89
Neuritis	192	165
Other affections of the nervous system such as paralysis agitans ...	401	268
Conjunctivitis	949	829
Affection of the ear or mastiod sinus	860	860
Other diseases of the heart	38	74
Valvular	23	15
Mitral	150	130
Aortic	16	44
Hæmorrhoids	120	116
Lymphadenitis or bubo (non-specific)	486	536
Coryza	884	552
Acute bronchitis	4,183	5,326
Chronic bronchitis	4,213	3,461
Asthma	143	162
Other affections of the lungs	982	593
Caries, pyorrhœa, etc.	4,169	1,400
Gastritis	394	389
Dyspepsia	3,495	3,603
Diarrhœa and enteritis, two years and over	958	779
Ankylostomiasis	84	185
Cestoda (tænia)	621	264
Ascaris	3,376	3,847
Diseases due to intestinal parasite unclassified	1	3
Hernia	479	689
Constipation	9,253	8,251
Other affections of the digestive system	473	836
Acute nephritis	95	53
Schistosomiasis	17	59
Epididymitis	40	33
Orchitis	208	225
Hydrocele	205	287
Ulcer of the penis	110	175
Abscess	512	577
Tinea	383	356
Scabies	761	1,091

Diseases	1931.	1932.
Eczema	428	221
Osteitis	330	291
Arthritis	1,433	1,616
Other diseases of the bones or organs of locomotion	2,195	2,385
Wounds (by cutting or stabbing instruments)	1,053	1,049
Fracture	148	159
Other external injuries	4,397	3,948
Ascites	78	45
Œdema	233	143
Asthenia	838	591

(*ii*) Communicable Diseases.

Malaria.—As is customary, the preventive measures aimed at this disease are given in detail in Section IV, "Hygiene and Sanitation."

In Europeans.—The malaria picture for 1932 more closely approximates to that of 1930 than to that of 1931. There was an increase in the total number treated, from 71 to 104. It must be recorded that the majority of these occurred in the commercial community, and in the Protectorate, where the living conditions are not comparable with those existing at Hill Station and Freetown, and where mining and industrial activities to which reference has already been made tend greatly to the occurrence of this disease. It must also be remembered that these figures include admissions to the European Nursing Home of seamen who are landed from the ships calling at Freetown. Of the total number treated during the year 36 were treated in hospital. There were no deaths. The following table shows the relative position of malaria as a cause of lost time among Europeans during the last five years:—

Year.	Average Number Resident.	Total Sick Days.	Total Days spent on Sick List for Malaria.	Total Days spent on Sick List for other Causes.	Percentage of Malaria Days to Total Days.	Number of Days lost through Malaria for year per 100 Residents.
1928	280	2,024	626	1,398	30·92	223
1929	251	1,935	435	1,500	22·48	173
1930	260	1,785	526	1,259	29·46	202
1931	177	1,463	258	1,205	17·63	145
1932	176	1,235	370	865	29·95	210

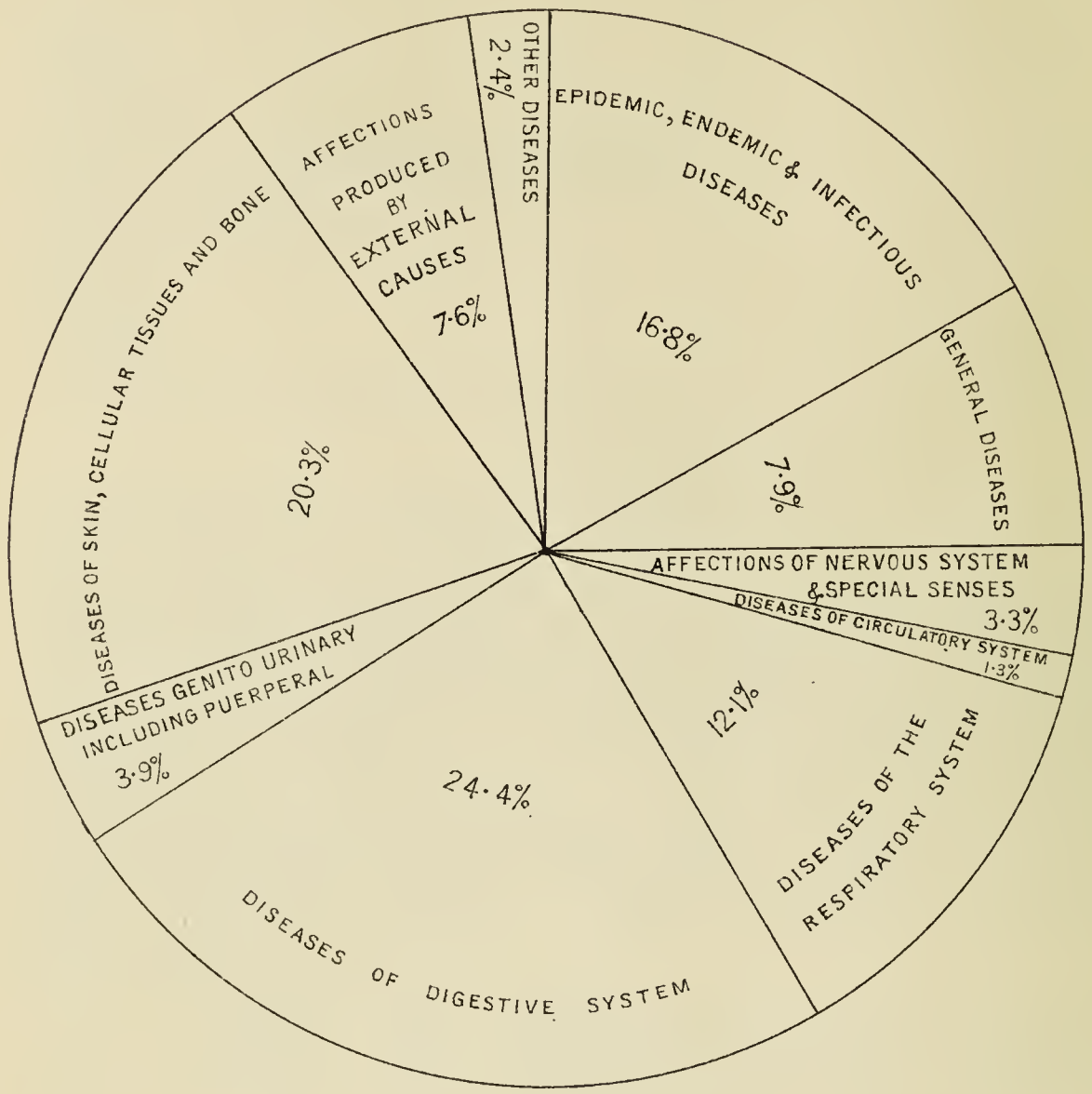
In Africans.—The figures for malaria for 1932 show a substantial decrease on those of the previous year, again indicating the comparative healthiness of the year under review. In 1931 there were 6,628 cases of malaria with 9 deaths, whereas in 1932 there were 4,859 with 6 deaths. Only one case of blackwater occurred. The cause of the great number of unclassified cases of malaria has already been referred to in previous reports, and is due, in a great measure, to those cases diagnosed as malaria by dispensers in out-stations who are not skilled in the use of the microscope. The number of cases recorded as unclassified in the year under review is less than that so diagnosed in 1931, this result being in a great measure achieved by the employment of one African Medical Officer as a whole-time Pathologist.

The following table gives the figures for the past three years:—

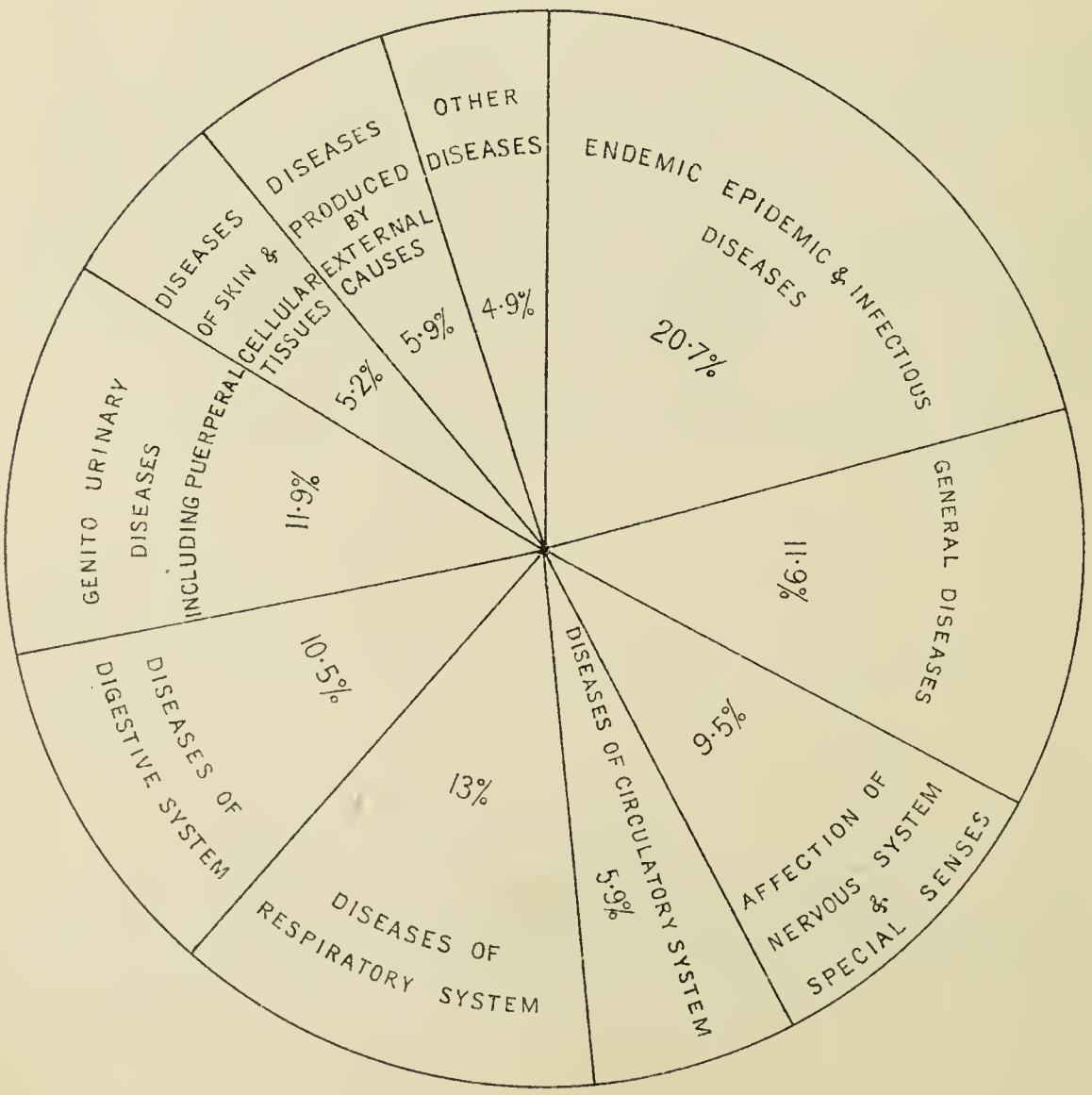
Diseases.	1930.	1931.	1932.
Malaria—tertian	45	2	66
Malaria—quartan	—	24	34
Aestivo—autumnal	1,957	2,235	1,036
Unclassified	4,082	4,324	3,680
Cachexia	11	39	41
Blackwater	6	4	2
Total cases of malaria (all types) ...	6,101	6,628	4,859

Blackwater Fever.—Only two cases were reported during the year under review, one being a fatal case of a European and one a minor case in an African who was treated as an out-patient.

PROPORTION OF EPIDEMIC, ENDEMIC, AND INFECTIOUS DISEASES.

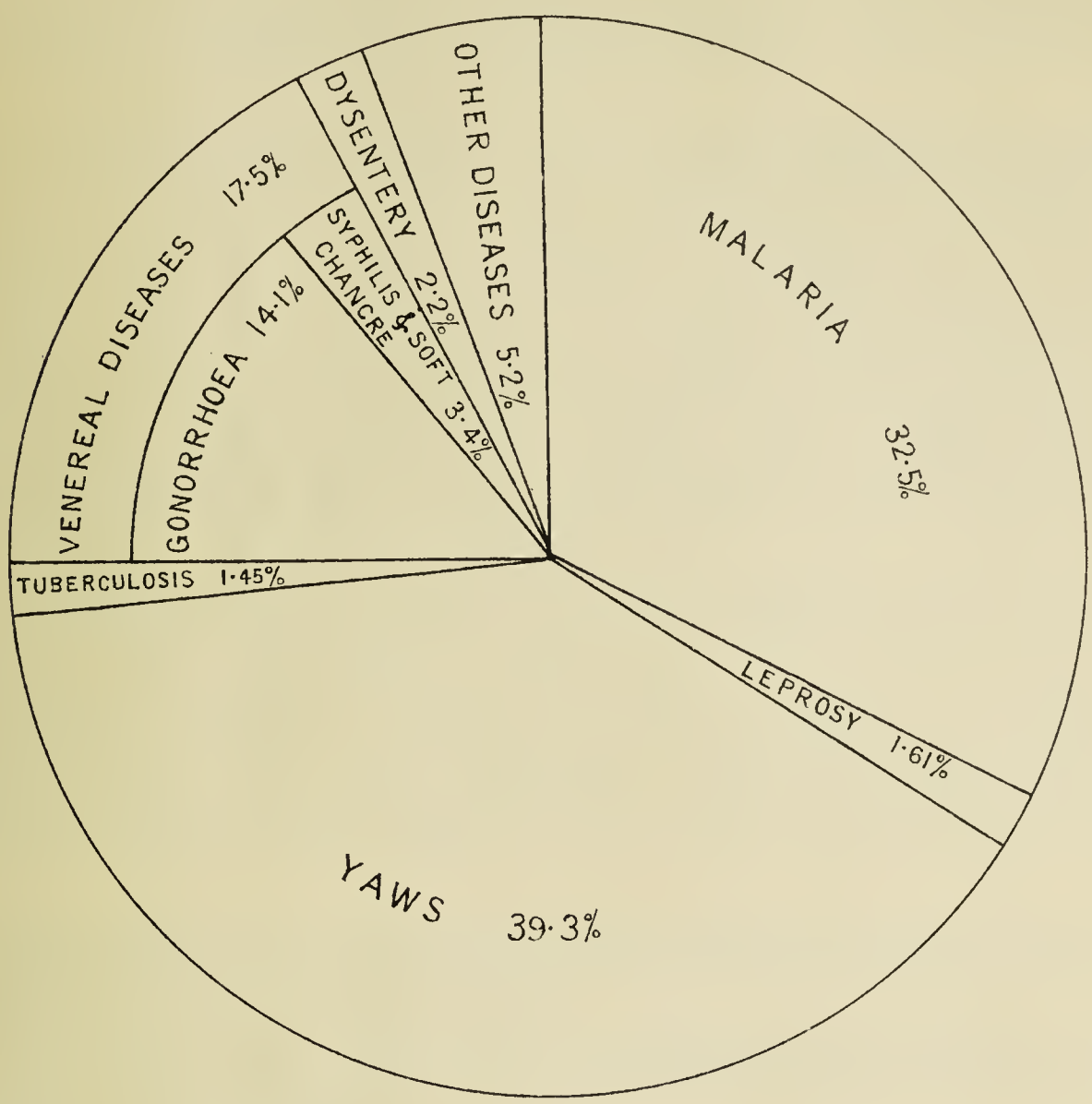


TOTAL INCIDENCE 88,387.

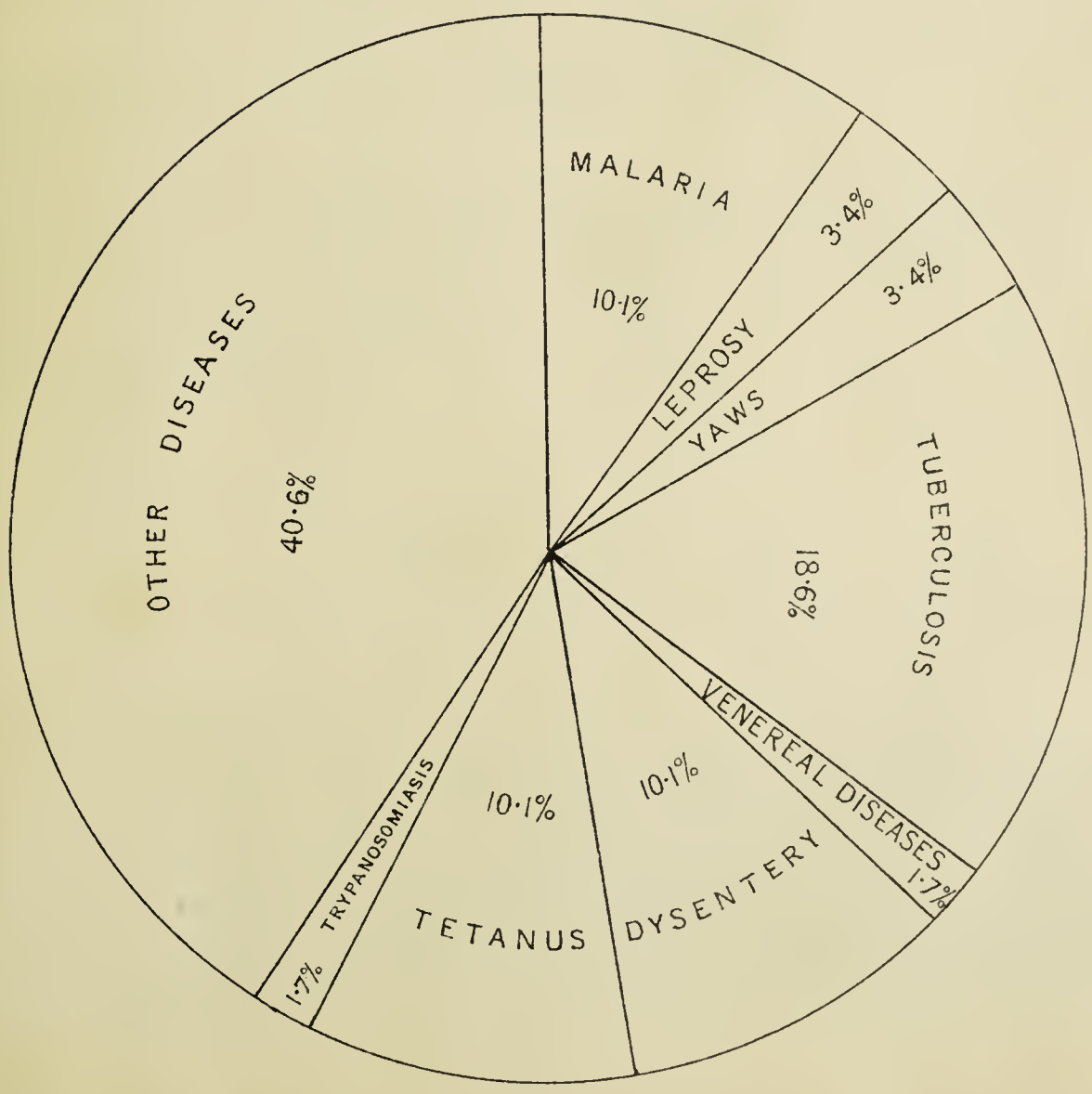


TOTAL DEATHS 284.

THE PROPORTION OF EPIDEMIC, ENDEMIC, INFECTIOUS, SYSTEMIC AND OTHER DISEASES SHOWN AS PERCENTAGES ON TOTAL CASES TREATED.



TOTAL INCIDENCE 14,975.



TOTAL DEATHS 59.

SURVEY H.Q ACCRA, 1934.

Trypanosomiasis.—One fatal case was reported in an African.

Smallpox.—As previously stated in the opening paragraph of this report, a widespread epidemic of smallpox was experienced during 1932. Full details of this epidemic will be found under Section IV, sub-section (b)—" Epidemic Diseases." It is sufficient to record here that the type was in the main mild and the death-rate low.

Dysentery.—The incidence of dysentery in 1932 was approximately the same as that for 1931. In that year 334 cases and 8 deaths occurred amongst Europeans and Africans and in 1932 there were 330 cases with 6 deaths. There were no fatal cases in Europeans.

Tuberculosis.—There was one case of invaliding in a European in 1932. In Africans a greater number of cases were recorded, there being 228 cases with 10 deaths, of which 95 cases and 3 deaths occurred in the Protectorate. I think it can be stated with safety that these figures in no way express a prevalence of the disease in Sierra Leone, nor do they give any indication of its fatality; but it can be presumed that any increase reported from year to year is merely a reflection on the present depression which, resulting as it does in a shortage of the essential commodities of life, tends to bring to hospital merely for shelter and comfort those cases of tuberculosis which in normal times would never have reported.

Leprosy.—Cases reported in 1932 again show a decrease in those of 1931. In all 244 cases were reported with 2 deaths; of these 170 occurred in the Protectorate. Here again the figures do not indicate the prevalence of this disease, and in Sierra Leone chiefs have so far not set up those leper villages which are to be found in any other Colony in West Africa. It is thus somewhat impossible to estimate the extent of leprosy in the Protectorate, but it would be safe to estimate that its percentage would not fall much below that of Northern Nigeria, both countries being inhabited by people who in the far distant past spring from the parent tree, whose climates are similar, and whose habits are in the main the same.

Typhoid.—No case was reported in a European during 1932. 13 cases of definitely diagnosed typhoid with 3 deaths were recorded in Africans, and in the Protectorate 2 cases of an ill-defined type with 1 death were recorded.

Yaws.—The number of cases treated in the year under review again shows a great falling-off when compared with those of former years. The decrease is so noticeable that it may be worth while to quote the figures:—

1929	16,929
1930	14,082
1931	7,449
1932	5,891

It is worthy of note that in 1932 over 60 per cent. of the patients were recorded from the Protectorate. Subsidized missions who make a report to Government record that people still come for treatment, and I think it is fair to deduce that the falling-off in the number of cases is largely owing to the reduction of infectivity risk achieved by the widespread treatment rather than owing to any pain caused by the B.S.P.T. treatment.

Venereal Diseases.—The figures for 1932 show a decrease from those of 1931. Indeed a glance at the table below demonstrates that the number of cases coming for treatment shows a gradual decline over the last five years. With the figures to hand it is not possible to state how far these figures truly represent the incidence of the disease; it is noteworthy that the greater percentage of decrease has taken place in the syphilitic group, whilst gonorrhœa declines but slowly.

Diseases.	1928.	1929.	1930.	1931.	1932.
Gonorrhœa	2,564	2,753	2,581	2,366	2,114
Syphilis	1,836	895	605	592	388
Total	4,400	3,648	3,186	2,958	2,502

Beriberi.—In 1932 only 8 cases with 2 deaths from this disease were recorded. Reference has already been made in the 1931 report to the investigation into the outbreak of this disease which took place in 1931. Consequent upon the findings of the investigation, the main point of which was to ascribe the cause of the disease to defective rice, a change was made from the rice supply and a new dietary was introduced late in 1932. It is at present too early to express any opinion on the correctness or otherwise of the deductions arrived at by the investigation recorded in the 1931 report. Reference to this will be made in the report of a subsequent year.

(*b*) VITAL STATISTICS.

General Population.

REPORT OF THE CHIEF REGISTRAR OF BIRTHS AND DEATHS.

Staff.

The present staff consists of—

The Chief Registrar
The Deputy Chief Registrar
Registrars, Colony 17
Registrars, Protectorate 8
Deputy Registrars, Protectorate 21.

The appointment of Chief Registrar of Births and Deaths is held by the Assistant Director of Health Service, and that of Deputy Chief Registrar by the Medical Officer of Health, Freetown. Registrars in the Colony are appointed from Government dispensers where dispensaries exist—or from private individuals, who are usually school teachers or traders. In the Protectorate the Registrars are Government Medical Officers and the majority of the Deputy Registrars are their dispensers.

Registration Districts.

Colony, special districts	5
Colony, other districts	12
Protectorate districts	37
	54

The Births and Deaths Registration Ordinance provides for the compulsory registration of all births and deaths in the Colony and for the appointment of Registrar's officers for the better enforcement of registration in the Colony registration districts of Freetown, Kissy, Congo Town, Murray Town and Wilberforce. In these "Special districts" births certificates are issued free at the time of registering, and bodies of deceased persons may not be buried without a burial certificate, which is issued by the Registrar of Births and Deaths at the time of registration. Registration of both births and deaths is effective in Freetown, but this cannot be said for the rest of the Colony districts where the majority of the Registrars are private individuals carrying on other occupations and without the machinery necessary for enforcing registration. In the Protectorate, comprising 95 per cent. of the total population, registration of births and deaths is compulsory only for non-natives, i.e. Europeans, Asiatics, Syrians and Colony-born Africans (Census population, 4,268); it is optional for the natives (population 1,667,790).

Population.

At the Census which was taken on 26th April, 1931, the population of Sierra Leone was returned as shown in detail in Table II hereunder. Table I shows the comparative populations required for the purpose of this report.

TABLE I.

Comparative Populations of Freetown, the Colony and the Protectorate, 1921 and 1931.

—	Total, 1931. Males.	Females.	Persons.	Total, 1921. Persons.	1921–1931. Increase + Decrease −
Whole Colony	52,552	43,870	96,422	85,044	+11,378
Freetown (including Cline Town)	30,011	25,347	55,358	44,023	+11,335
Colony (excluding Freetown and Cline Town) ...	22,541	18,523	41,064	41,021	+43
Protectorate	796,392	875,666	1,672,058	1,455,510	+216,548
Natives	793,877	873,913	1,667,790	1,450,903	+216,887
Non-natives	2,515	1,753	4,268	4,607	−339

TABLE II.

Analysis of Census.

NATIONALITY.	Colony.			Protectorate.			Colony and Protectorate.		
	Persons.	Males.	Females.	Persons.	Males.	Females.	Persons.	Males.	Females
Total Population	96,422	52,552	43,870	1,672,058	796,392	875,666	1,768,480	848,944	919,536
English	195	147	48	103	82	21	298	229	69
Irish	38	22	16	15	12	3	53	34	19
Scottish	49	34	15	20	17	3	69	51	18
Welsh	6	5	1	3	2	1	9	7	2
British Colonials	5	3	2	1	—	1	6	3	3
French	62	57	5	25	23	2	87	80	7
German	14	11	3	7	6	1	21	17	4
Swiss	11	10	1	19	15	4	30	25	5
Other Europeans	21	9	12	4	3	1	25	12	13
Americans	19	10	9	34	13	21	53	23	30
Sierra Leoneans	32,846	14,438	18,408	3,046	1,632	1,414	35,892	16,070	19,822
Other Africans, non-natives	684	454	230	72	46	26	756	500	256
West Indians	96	63	33	6	6	—	102	69	33
Mulattoes	149	66	83	141	81	60	290	147	143
African native tribes	61,783	36,914	24,869	1,667,790	793,877	873,913	1,729,573	830,791	898,782
Indians	23	20	3	2	2	—	25	22	3
Syrians	413	288	131	753	561	192	1,166	834	323
Other Asiatics	8	7	1	17	14	3	25	21	4

Freetown.—During the intercensal period 1921–1931, the population of Freetown increased from 44,023 to 55,358, i.e. by 11,335 persons; but the death-rate exceeded the birth-rate for the past ten years, and it has been shown by the Census Officer that the increase was due to immigration of natives from the Protectorate, chiefly men and boys in search of work—*see* Table I above.

Colony apart from Freetown.—During the intercensal period 1921–1931, the population of the rest of the Colony increased from 41,021 to 41,064 persons, i.e. by only 43 persons.

Protectorate.—The native population increased from 1,450,903 in 1921 to 1,667,790 in 1931, i.e. by 216,887 persons. This increase during the intercensal period represents an actual increase due to natural increment and not to migratory causes.

The non-native population enumerated at the 1921 census was 4,607 persons, the figure for 1931 being 4,268, i.e. a decrease of 339 persons.

Registration.

General Statement.—The total number of births registered for the whole Colony was 2,439 (males 1,198 and females 1,241) affording a general birth-rate of 24·9 per 1,000 population (Table C). The total number of deaths registered for the whole Colony was 2,404 (males 1,252 and females 1,152) affording a general crude death-rate of 24·5 per 1,000 population (Table C).

The total number of deaths under twelve months of age registered in the whole Colony was 567 (males 291, and females 276) equivalent to an infant mortality rate of 233 per 1,000 live births (Table C). As will be explained, the figures given above are not reliable owing to the lack of supervision and machinery for enforcing registration in the Colony apart from Freetown.

No figures are available for birth, death and infant mortality rates in the Protectorate, registration not being compulsory.

Freetown.

The registration figures of births and deaths at Freetown represent fairly accurately the number of births and deaths which actually took place. Every precaution has been taken to secure registration of births; it is probable that at least 90 per cent. of those which take place are registered. Further, as the cemeteries are under control and no burial can take place without a certificate from the Registrar, the number of deaths which escape registration is negligible. For these reasons, and also on account of the desirability of gauging the value of the Government health services and of the maternity and child welfare clinics at Freetown, the figures for Freetown are stated separately in the tables from those for the rest of the Colony, where the conditions are different (*vide infra*).

The estimated mid-year population of Freetown for 1932 was 56,857 and the rates shown are calculated from this figure.

Births.—The number of births registered at Freetown in 1932 was 1,276 (males 635 and females 641) compared with 1,263 in 1931.

The birth-rate was 22·4 per 1,000 population compared with 22·7 in 1931. This comparatively low birth-rate for an African community is due to the excess of males over females in the population (*see* Table I.).

Deaths.—The number of deaths registered at Freetown was 1,400 (males 708 and females 692) compared with 1,380 (males 772 and females 608) in 1931. Deaths thus exceeded by 124 the number of births registered.

The crude death-rate was 24·6 per 1,000 population compared with 24·8 in 1931 (Table D). In the report for the latter year it was stated that the high crude death-rate was due to the excess of males (immigrants from the Protectorate in search of work) over females in the population and this was borne out by the disparity in the number of deaths recorded for each sex: males 772, females 608, i.e. male deaths exceeded female deaths by 164 (or 27 per cent.). In 1932, male deaths exceeded female deaths by only 16 (or 2·3 per cent.). Further comment is reserved pending the figures for next year.

The number of deaths registered on medical certificates was 319 compared with 294 in 1931, and comprised 22·7 per cent. of the total deaths registered (Table G).

The registers in use during the year did not contain the information necessary for correction of the death-rate to exclude deaths of non-residents. Departmental instructions have since been issued to remedy this defect. Further, it is to be regretted that the unusual age groupings of the population adopted in the Census Report did not permit of the application of the methods used for expressing the death-rate in terms of a standard population, nor indeed was the age distribution of the Freetown population shown separately from that of the whole Colony.

Still-births.—77 still-births were registered in Freetown (males 38 and females 39) compared with 52 in 1931. These figures cannot be considered accurate, owing to the reluctance of African women to disclose the fact of not having carried to full term.

Infant Mortality.—The total number of deaths under twelve months of age at Freetown was 348 (males 179 and females 169) compared with 365 in 1931. The infant mortality rate was high: 272 per 1,000 live births, but shows a decrease compared with 289 in 1931.

It is too early yet to say whether this decrease is to be attributed to the work of the Infant Welfare Centres.

Maternal Mortality.—There were 19 maternal deaths, giving a maternal mortality of 14·9 per 1,000 live births. The causes of maternal mortality at Freetown are shown in Table J.

Colony apart from Freetown.

Registration figures of births and deaths for the rest of the Colony cannot yet be regarded as representing even the numbers of births and deaths which actually take place. The conditions are rural, the population scattered and the villages far apart; so it is probable that a number of burials take place outside the cemeteries which are not yet under control. But propaganda can be conducted through the schools and village headmen to indicate the benefits of registering. Extension of the number of special districts and the appointment of Registrars' Officers, when circumstances permit, to ascertain and enforce registration of births and deaths should also do much to improve the numerical value of the returns. The registrars, who are all paid fees by Government according to the numbers registered, will be encouraged to take more interest, and the cemeteries brought under control as early as possible so that burials may not take place without a certificate from the local registrar. In certain districts the presence of police officers may also be of assistance, although so far their co-operation has of necessity been limited owing to shortage of staff.

Births.—The number of births registered was 1,163 (males 563 and females 600) compared with 838 in 1931. This increase of 325 (equivalent to 38·7 per cent.) in the number of births registered over the previous year is to be attributed to greater zeal on the part of the registrars at Waterloo, Wellington and Songo Town, which showed increases of 278, 25 and 24, equivalent to 344 per cent., 51 per cent. and 25 per cent., respectively, on the previous year's figures. These very high percentage increases are indicative of what can be done on the part of a keen registrar to improve registration in his district (Table E).

Births exceeded deaths registered by 159, the latter figure possibly approximating the number of deaths which escaped registration.

The estimated crude birth-rate was 28·3 per 1,000 compared with 20·4 in 1931, the latter figure being too low owing to many births having escaped registration during the previous year.

Deaths.—The number of deaths registered was 1,004 (males 544 and females 460) compared with 925 in 1931.

The estimated crude death-rate was 24·4 per 1,000 population compared with 22·5 in 1931 (Table E).

Still-births.—Registration of still-births is compulsory only in four special districts of the Colony. The number recorded was 15 (males 8 and females 7).

Infant Mortality.—The total number of deaths under twelve months of age was 219 (males 112 and females 107) compared with 191 in 1931. The infant mortality rate was 188 per 1,000 live births compared with 228 in 1931. This reduction is only apparent: it is due to the fact that there was an increase of 325 (38·7 per cent.) in the number of births registered over the previous year, for which the figure is therefore too high. As would be expected, the infant mortality rate in the rural areas is considerably below that in Freetown, namely, 188 as compared with 272 per 1,000 live births; hence the prior claim and necessity for child welfare activities in the densely populated area of Freetown.

Protectorate.

As stated earlier in this report, registration of births and deaths in the Protectorate is compulsory (and free of charge) only for non-natives who numbered but 4,268 at the Census of 1931, which number may have been slightly reduced in 1932 consequent upon the return of Sierra Leonean non-natives to the Colony.

For the native population, which numbered 1,667,790 persons in 1931, registration is optional or permissive, and at present practically non-existent: the fact that a fee of sixpence is charged for registering the birth or death of a native is a strong deterrent rather than an inducement for them to come forward and register, especially as they are unable owing to lack of education to realize the possible benefits of registering.

Thus the figures obtained from the present elementary system of compulsory and optional registration, which only applies to comparatively small and isolated districts where trading activities attract the presence of non-natives, are useless for the purpose of statistics. The system was introduced as a preliminary to the introduction later of compulsory registration, free of charge, for natives in well established medical districts. Pending the abolition of the fees now charged, propaganda with a view to paving the way towards this desirable end would be unlikely to achieve any results.

Births.—The number of births registered was 244 (males 135 and females 109) compared with 557 in 1931. (Table B).

Deaths.—The number of deaths registered was 185 (males 112 and females 73) compared with 452 in 1931. (Table B).

The marked decrease in the number of births and deaths recorded is to be attributed to lack of funds on the part of natives desiring to register optionally.

Table B shows the number of births, deaths, etc., registered in each registration district of the Protectorate, and also the activities of the District Registrars.

TABLES.

The duties in connection with registration of births and deaths were taken over by the Health Department in July, 1930. Prior to 1931 the figures for births at Freetown (Table D) are not reliable; a careful search of the registers for the year 1922 and 1929 revealed the fact that only 72·4 per cent. and 72·5 per cent. respectively of the deaths of children under one year of age could be traced as births in the birth registers. Hence the birth-rates appear lower and the infant mortality rates higher than they really were.

In 1931, which was the first complete year during which registration was under the control of this department, 95 per cent. of the deaths of children under one year of age at Freetown were traced as births in the births registers, and the number of births registered increased by 161 or 14·6 per cent. It is probable that the percentage registered of births which took place lies between 87 and 95 per cent.

For the Colony apart from Freetown, the figures in Table E (and also in Table C) are obviously unreliable for the years prior to 1932. But there are indications, as stated above, that much improvement can be effected by registrars who are interested in their work. The estimated birth-rate in 1932 was 28·32 per 1,000 (Table E), which approaches the high figure one would expect in an African population of the sex distribution shown for the Colony in Table I.

The estimated crude death-rate for the Colony apart from Freetown was 24·4. In view of the high birth-rate and the fact that the population remained stationary as regards numbers during the intercensal period 1921–1931 it is probable that this figure is too low, owing to some proportion of deaths having escaped registration. It is hoped that legislation will be effected at an early date to bring the cemeteries under control and thus eliminate a possible defect in the present system.

For statistical purposes, reliable figures and rates for the Colony as a whole are much to be desired; also the age and sex distribution of the population of Freetown, and of the whole Colony, in the groupings usually adopted to permit of estimation of standardized rates for comparison with other countries. The latter information will not be available until the Census of 1941, by which time it is hoped that an African standard population will have been determined. Meantime much can be done to improve the data as regards causes of deaths at Freetown (*see* note under Table F.) and to effect better registration especially as regards numbers of births and deaths in other parts of the Colony and the Protectorate.

A. B. MONKS,
Acting Chief Registrar.

TABLE A.

Births and Deaths recorded at all Registration Districts in the Colony—1932.

DISTRICTS	BIRTHS.			DEATHS.			DEATHS UNDER TWELVE MONTHS.			REMARKS.
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	
Freetown and Cline Town ...	635	641	1,276	708	692	1,400	179	169	348	
Murray Town ...	27	32	59	39	38	77	7	9	16	Infant
Wilberforce ...	31	46	77	27	30	57	5	11	16	mortality
Regent ..	14	14	28	11	12	23	2	1	3	rate :—
Kissy ...	32	34	66	69	51	120	5	4	9	Freetown
Wellington ...	46	30	76	59	42	101	14	11	25	including
Hastings ...	33	31	64	32	31	63	8	6	14	Cline Town,
Waterloo ...	189	203	392	93	70	163	15	15	30	272.
York ...	19	21	40	29	21	50	3	6	9	
Tombo ...	20	20	40	36	26	62	7	8	15	
Kent ...	14	22	36	16	5	21	4	1	5	Colony
Tassoh Island ...	41	32	73	37	28	65	22	15	37	other than
Bananas Island	7	10	17	11	14	25	1	3	4	Freetown,
Hamilton ...	8	9	17	12	11	23	—	—	—	188.
Songo Town ...	55	61	116	37	34	71	4	7	11	
Sherbro Judicial	27	35	62	36	47	83	15	10	25	
Total ...	1,198	1,241	2,439	1,252	1,152	2,404	291	276	567	

TABLE B.

Births and Deaths recorded at all Registration Districts in the Protectorate— 1932.

DISTRICTS.	BIRTHS.			DEATHS.			DEATHS UNDER TWELVE MONTHS.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
Northern Province.									
Port Loko	13	11	24	2	1	3	—	—	—
Kambia	11	9	20	17	19	36	1	—	1
Batkanu	11	13	24	1	1	2	—	—	—
Makeni	7	3	10	1	—	1	—	—	—
Kabala	2	3	5	1	1	2	—	1	1
Southern Province.									
Mabang	—	2	2	1	—	1	—	—	—
Bauya	3	—	3	1	—	1	—	—	—
Moyamba	11	8	19	3	—	3	—	—	—
Mano	9	7	16	8	2	10	2	—	2
Sembehun	—	1	1	1	1	2	—	—	—
Bo	5	6	11	2	4	6	2	—	2
Sumbuya	3	2	5	1	1	2	—	—	—
*Panguma	—	—	—	—	—	—	—	—	—
Kenema	20	14	34	1	1	2	—	—	—
Kaiyima	5	—	5	1	—	1	—	—	—
Daru	8	2	10	7	—	7	—	—	—
Pendembu	21	23	44	43	37	80	9	3	12
Kailahun	2	2	4	—	—	—	—	—	—
Pujehun	1	1	2	18	1	19	—	—	—
Sulima	2	1	3	1	1	2	—	—	—
Shebar	1	1	2	2	3	5	—	—	—
Total ...	135	109	244	112	73	185	14	4	18

* Panguma Office had to be closed down owing to the impossibility of finding a literate person there to carry on the registration of births and deaths.

TABLE C.

Birth, Death and Infant Mortality Rates for the whole Colony of Sierra Leone (including Freetown), for the last five years.

Year.	Estimated Mid-year Population.	Births Registered.	Crude Birth-rate per 1,000 Population.	Deaths Registered.	Crude Death-rate per 1,000 Population.	Number of Deaths under twelve months.	Infant Mortality per 1,000 Live Births.
1928	92,942	1,986	21·3	2,429	26·1	628	316
1929	94,144	2,022	21·4	2,457	26·0	596	295
1930	95,375	1,892	19·8	2,197	23·0	568	300
1931	96,633	2,101	21·7	2,305	23·9	556	265
1932	97,921	2,439	24·9	2,404	24·5	567	233

TABLE D.

Birth, Death and Infant Mortality Rates, Freetown, 1928–1932.

1928	51,878	1,036	19·9	1,389	26·8	377	364
1929	53,080	1,093	20·6	1,450	27·5	349	319
1930	54,311	1,102	20·3	1,358	25·0	371	336
1931	55,569	1,263	22·7	1,380	24·8	365	289
1932	56,857	1,276	22·4	1,400	24·6	348	272

TABLE E.

Birth, Death and Infant Mortality Rates, Colony (excluding Freetown), for the last five years.

1928	41,064	950	23·1	1,040	25·3	251	264
1929	41,064	929	22·6	1,007	24·5	247	266
1930	41,064	790	19·2	839	20·4	197	249
1931	41,064	838	20·4	925	22·5	191	228
1932	41,064	1,163	28·3	1,004	24·4	219	188

TABLE F.

Principal Causes of Deaths—1932.*

Causes.	Freetown (including Cline Town), 1,400.		Colony (excluding Freetown). 1,004.	
	No.	Percentage.	No.	Percentage.
Pneumonia and bronchitis ...	263	18·7	98	9·7
Malaria, including blackwater ...	197	14·0	119	11·8
Senility	103	7·3	73	7·2
Dysentery, diarrhœa and enteritis ...	96	6·8	88	8·8
Premature birth	77	5·5	7	0·7
Infantile convulsions	58	4·1	53	5·2
Diseases of the heart	40	2·8	52	5·1
Nephritis	40	2·8	33	3·2
Pulmonary tuberculosis	37	2·6	35	3·4
Septicæmia	22	1·5	13	1·3
Whooping cough	16	1·1	50	4·9
Ill-defined diseases, including rheumatism and lumbago ...	120	8·5	134	13·3

* The number of deaths registered on medical certificate at Freetown was 319 comprising 22·7 per cent. of the total deaths registered. The figures as to the causes of deaths registered at Freetown are therefore only an approximate statement of the mortality cause. They cannot be considered as accurate until a system of medical certification is compulsory. At present, all non-certified deaths are personally investigated by the Medical Officer of Health (who is also Deputy Chief Registrar of Births and Deaths) and from the information given an approximate diagnosis is made ; in cases of doubt, or on the slightest suspicion of infectious disease, a post-mortem examination is made. In the rest of the Colony, there are no medical officers except at Sherbro and Kissy, and no private practitioners. The Registrars are Government Dispensers or private individuals, and difficulty is frequently experienced in finding a literate person capable of making the entries in the registers. Further, as the returns are received for correction by the Chief Registrar only at the end of each quarter, little supervision can be exercised beyond periodic visits and written guidance as to the methods for ascertaining and entering up the causes of death, which are therefore of but little value for the purpose of statistics. Little improvement can be expected in this direction until more general progress has been made throughout the Colony.

TABLE G.

Death Certificates, Freetown and Kissy, 1931 and 1932.

—	European Hospital.	Connaught Hospital.	P. C. M. Hospital.	Kissy Institution.	Private Practitioner.	Ships in Harbour.
1931	3	169	31	45	91	—
1932	—	207	14	53	98	—

TABLE H.

Causes of Deaths under Twelve Months—1932.*

International List Number.	Causes.	FREETOWN—348 (including Cline Town).		COLONY—219 (excluding Freetown).		PROTECTORATE 18.	
		No.	Percentage.	No.	Percentage.	No.	Percentage.
1	Typhoid fever	1	0·2	—	—	—	—
9	Whooping cough	16	4·5	30	13·6	1	5·5
13	Dysentery	—	—	1	0·4	—	—
22	Tetanus neonatorum	8	2·2	—	—	—	—
34a	Congenital syphilis	—	—	—	—	4	22·2
38	Malaria	35	10·0	36	16·4	3	16·6
39	Yaws	1	0·2	—	—	—	—
44 : 5	Mumps	—	—	1	0·4	—	—
63 : 1	Rickets	4	1·1	—	—	—	—
71b:1	Splenic anæmia	1	0·2	—	—	—	—
71b:2	Anæmia	—	—	1	0·4	—	—
86	Infantile convulsions	58	16·6	53	24·2	5	27·7
106a	Acute bronchitis	1	0·2	—	—	—	—
106c	Bronchitis	26	7·7	37	16·8	2	11·1
107	Broncho-pneumonia	10	2·8	8	3·6	—	—
108	Apical pneumonia	1	0·2	—	—	—	—
109	Pneumonia	9	2·5	21	9·5	2	11·1
118 : 1	Gastritis	1	0·2	—	—	—	—
119&120a2	Infantile diarrhœa	22	6·3	—	—	—	—
119&120a2	Gastro-enteritis	1	0·2	2	0·9	—	—
119&120a2	Colic	1	0·2	—	—	—	—
122b	Intestinal obstruction	1	0·2	3	1·3	—	—
122b	Intussusception	1	0·2	—	—	—	—
157b	Spina bifida	1	0·2	—	—	—	—
158	Congenital debility	10	2·8	7	3·1	—	—
158	Hydramnios	—	—	1	0·4	—	—
158	Inanition	5	1·4	—	—	—	—
158	Malnutrition	3	0·8	—	—	—	—
158	Marasmus	9	2·5	—	—	—	—
159	Prematurity	77	22·1	7	3·1	1	5·5
160b	Compression during birth	1	0·2	—	—	—	—
160b	Cerebral hæmorrhage (due to injury at birth)	1	0·2	—	—	—	—
160b	Birth paralysis	1	0·2	—	—	—	—
161a	Asphyxia neonatorum	6	1·7	—	—	—	—
161a	Atelectasis	4	1·1	1	0·4	—	—
161a	Asphyxia livida	1	0·2	—	—	—	—
200 : 1	Cardiac failure	30	8·6	8	3·6	—	—
200 : 2	Hyperpyrexia	1	0·2	2	0·9	—	—

*See note under Table F.

TABLE J.

Deaths at various Ages up to Twelve Months with percentages of Total Deaths under Twelve Months, Freetown, 1931 and 1932.

YEAR.	Number of Deaths at Age, and Percentage of total Deaths under Twelve Months.									
	Under 24 hours.	24 hours to 2 weeks.	Total under 2 weeks.	2–4 weeks.	Total under one month.	1–3 months.	Total under 3 months.	3–6 months.	6–12 months.	Total under 12 months.
1931	57 or 15·9 per cent.	118 or 32·3 per cent.	175 or 48·0 per cent.	30 or 8·2 per cent.	205 or 56·2 per cent.	58 or 15·9 per cent.	263 or 72·0 per cent.	45 or 12·3 per cent.	57 or 15·6 per cent.	365
1932	52 or 14·9 per cent.	111 or 31·9 per cent.	163 or 46·8 per cent.	23 or 6·6 per cent.	186 or 53·4 per cent.	38 or 10·9 per cent.	224 or 64·4 per cent.	37 or 10·6 per cent.	87 or 25·0 per cent.	348

TABLE K.

Maternal Deaths associated with Pregnancy and Child-bearing, Freetown, 1932.

International List Number.	Causes of Deaths.	Number of Deaths.			Maternal Mortality Rates per 1,000 live births.
		Certified.	Uncertified	Total.	
140	Septic abortion ...	—	1	1	Diseases and accidents of pregnancy : 5·5
141 : 1	Ante-partum hæmorrhage	1	—	1	
147	Toxæmia of pregnancy ...	3	1	4	
147	Hyperemesis gravidarum ...	1	—	1	
150 : 3	Childbirth	—	1	1	Accidents of child birth : 1·6
144b	Post-partum hæmorrhage	1	—	1	
145a	Puerperal sepsis ...	2	3	5	Diseases of the puerperium : 7·8 (Puerperal sepsis 7·0)
145a	Puerperal fever ...	—	4	4	
146 : 2	Uræmia of pregnancy ...	1	—	1	
	Total	9	10	19	

The Maternal mortality rate was 14·9 per 1,000 live births.

The revised figure for 1931 shews twelve deaths registered under this heading (of which only one was uncertified), yielding a maternal mortality of 9·5 per 1,000 live births. The increase in 1932 is chiefly due to the increase in the number of uncertified deaths from this cause consequent upon the investigation into the causes of uncertified deaths by the Deputy Chief Registrar. *See* note under Table E.

TABLE L.

*Causes of Death—1932.**

International List Number.	Causes.	FREETOWN (including Cline Town).		COLONY (excluding Freetown).		PROTECTORATE	
		No.	Certified.	No.	Certified.	No.	Certified.
1	Typhoid fever	3	3	1	—	—	—
6	Smallpox	—	—	1	—	—	—
9	Whooping cough	16	—	50	—	5	—
13	Dysentery	42	5	42	3	11	3
13b	Bacillary dysentery	1	1	—	—	—	—
17	Encephalitis lethargica	—	—	1	1	—	—
22	Traumatic tetanus	8	3	2	2	2	1
22	Tetanus neonatorum	8	3	1	1	—	—
23	Pulmonary tuberculosis	37	10	35	7	5	2
23	Miliary phthisis	1	1	—	—	—	—
33	Leprosy	—	—	2	2	—	—
34a	Congenital syphilis	—	—	—	—	4	3
34b	Tertiary syphilis	—	—	1	1	—	—
35 : 2	Gonorrhœal septicæmia	1	1	—	—	1	1
35 : 2	Gonorrhœa	1	1	—	—	—	—
36a	Septicæmia	22	4	13	—	1	1
36b	Pyæmia	—	—	1	1	—	—
36c	Gas gangrene	1	1	—	—	—	—
38	Malaria	194	12	119	—	17	2
38	Malignant tertian malaria	2	2	—	—	—	—
39	Yaws	4	1	—	—	—	—
40	Ankylostomiasis	1	1	—	—	—	—
42	Helminthiasis	—	—	—	—	1	1
44 : 5	Mumps	—	—	1	—	—	—
44 : 6	Blackwater fever	1	1	—	—	—	—
46	Carcinoma ventricoli	1	1	—	—	—	—
46	Cancer of intestine	9	4	1	1	—	—
46	Cancer of mesentery	1	1	—	—	—	—
46	Cancer of rectum	2	2	—	—	—	—
46	Cancer of liver	2	2	—	—	—	—
47	Cancer of the lung	1	1	—	—	—	—
48	Cancer of the uterus	2	1	—	—	—	—
51	Cancer of bladder	1	1	—	—	—	—
51	Cancer of prostate	1	1	—	—	—	—
53	Cancer	1	1	1	—	—	—
53	Cancer of abdomen	2	—	—	—	—	—
53	Cancer of spleen	1	1	—	—	—	—
53	Cancer of lymph glands	1	1	—	—	—	—
54	Tumour (non-malignant)	1	—	—	—	—	—
55	Cerebral tumour	1	1	—	—	—	—
56	Rheumatism (undefined)	25	1	43	—	—	—
56	Rheumatic endocarditis	1	1	—	—	—	—
57 : 2	Rheumatic arthritis	1	1	—	—	—	—
59	Diabetic coma	3	3	—	—	—	—
61	Beriberi	—	—	2	2	—	—
63 : 1	Rickets	4	2	—	—	—	—
66a	Goitre	1	1	—	—	—	—
70b	Hæmophilia	1	1	—	—	—	—
71b1	Splenic anæmia	1	1	—	—	—	—
71b2	Anæmia	—	—	2	—	3	1
72b	Lymphadenoma	1	1	—	—	—	—
73 : 2	Perisplenitis	1	1	—	—	—	—
73 : 2	Enlargement of spleen	—	—	1	1	—	—
78b	Encephalitis	1	1	1	1	—	—
79	Pneumococcal meningitis	2	2	—	—	—	—
79	Meningitis	5	3	—	—	—	—
79	Cerebral meningitis	1	1	—	—	—	—
82a : 1	Cerebral hæmorrhage	7	2	3	2	—	—
82b : 2	Cerebral thrombosis	1	1	—	—	—	—
82c : 1	Hemiplegia	4	3	11	1	2	—
82c : 2	Cerebral paralysis	2	—	—	—	—	—
82c : 2	Paralysis	10	—	21	5	—	—
82c : 2	Paraplegia	4	2	6	2	—	—
84b	Acute delirious mania	1	1	—	—	—	—
85	Epilepsy	—	—	2	†1	—	—

*See note under Table F. The same remarks apply to the returns included in this Table and also for the Protectorate, where active supervision can be exercised only in eight medical stations where the Medical Officers are Registrars. These returns will in future be classified in a condensed Table, comparable with similar returns for the Gold Coast, shewing sex and ages at death.

†Certified by the Medical Officer in charge of the Kissy Asylum.

TABLE L—*continued.*

Causes of Death—continued.

International List Number.	Causes.	FREETOWN (including Cline Town).		COLONY (excluding Freetown).		PROTECTORATE.	
		No.	Certified.	No.	Certified.	No.	Certified.
86 ...	Infantile convulsions ...	58	...	53	...	5	1
87b ...	Neuralgia	6	...	...	...	...	...
87e ...	Neurasthenia	...	...	1	1	...	...
89 ...	Otitis media	1	1	...	...	...	...
89b ...	Mastoid disease ...	1	1	...	...	...	...
90 ...	Septic pericarditis ...	1	1	...	...	...	...
90 ...	Pericarditis	5	4	...	...	...	...
91 : 2 ...	Acute endopericarditis	2	1	...	...	...	...
92 : 1 ...	Aortic incompetency ...	9	9	...	...	...	...
92 : 2 ...	Mitral incompetency ...	5	5	7	1	...	...
92 : 2 ...	Mitral stenosis ...	1	1	...	...	...	...
92 : 4 ...	Endocarditis	...	...	...	...	1	1
92 : 5 ...	Chronic endocarditis ...	1	1	...	...	...	...
93c ...	Myocarditis (undefined)	9	9	1	1	...	...
95b : 2 ...	Cardiac disease ...	7	2	44	5	8	1
96 ...	Aneurism of aorta ...	1	1	...	...	...	...
96 ...	Aneurism	...	...	...	...	2	1
98b ...	Cancrum oris ...	1	1	...	...	...	...
98b ...	Septic gangrene ...	...	...	1	1	...	...
101 ...	Bubo of groin ...	...	...	...	...	1	1
103 ...	Internal hæmorrhage ...	1	1	...	...	...	...
105 : 2 ...	Laryngitis	1	1	...	...	...	...
106a ...	Acute bronchitis ...	1	1	...	...	...	...
106b ...	Chronic bronchitis ...	2	2	1	1	...	...
106b ...	Bronchiectasis ...	1	1	...	...	...	...
106c ...	Bronchitis	93	3	37	...	18	...
107 ...	Broncho-pneumonia ...	61	4	14	8	...	...
108 ...	Lobar pneumonia ...	5	5	...	...	1	1
108 ...	Apical pneumonia ...	1	1	...	...	...	...
109 ...	Pneumonia	99	10	61	3	19	1
110 : 2 ...	Pleurisy	8	3	...	...	5	...
111 : 1 ...	Pulmonary apoplexy ...	1	1	...	...	...	...
111 : 1 ...	Œdema of lungs ...	2	1	...	...	...	...
111 : 2 ...	Pulmonary infarct ...	1	1	...	...	...	...
112 ...	Bronchial asthma .	6	5	...	...	...	...
115 : 1 ...	Alveolar abcess ...	1	1	1	1	...	...
115 : 1 ...	Stomatitis	2	...	...	...	...	...
115 : 3 ...	Septic tonsillitis ...	1	...	...	...	...	...
115 : 4 ...	Pharyngitis	...	...	1	1	...	...
117a ...	Gastric ulcer	1	1	...	...	...	...
117b ...	Perforation of duodenum	1	1	...	...	...	...
117b ...	Duodenal ulcer ...	1	1	...	...	...	...
118 : 1 ...	Gastritis	3	3	...	...	...	...
118 : 2 ...	Gastric hæmorrhage ...	1	1	...	...	...	...
118 : 2 ...	Indigestion	...	...	22	...	...	...
119 & 120a : 2	Enteritis	5	1	2	...	2	...
119 & 120a : 2	Diarrhœa	26	2	44	6	23	...
119 & 120a : 2	Infantile Diarrhœa ...	22	...	...	...	...	...
119 & 120a : 2	Intestinal toxæmia ...	1	1	...	...	...	...
119 & 120a : 2	Gastro-enteritis ...	3	3	2	...	...	...
119 & 120a : 2	Colic	1	1	...	...	...	...
119 & 120a : 2	Dyspepsia	1	1	...	...	...	...
119 & 120a : 2	Gastro intestinal irritation ...	2	2	...	...	...	...
119 & 120b ...	Ulcerative colitis ...	1	1	...	...	...	...
121 ...	Appendicular abscess ...	1	1	...	...	...	...
122a ...	Inguinal hernia ...	...	...	...	...	2	...
122a : 1 ...	Strangulated hernia ...	4	1	8	...	1	...
122a : 2 ...	Hernia	...	...	...	...	7	7
122b ...	Volvulus	1	1	...	...	...	...
122b ...	Intussusception ...	1	1	...	...	...	...
122b ...	Intestinal obstruction	4	1	3	...	...	...
123 : 3 ...	Fæcal fistula ...	1	1	...	...	...	...
123 : 3 ...	Recto-vaginal fistula ...	1	1	...	...	...	...
124b ...	Cirrhosis of liver ...	4	2	...	...	...	...

TABLE L—*continued.*

Causes of Death—continued.

International List Number.	Causes.	FREETOWN (including Cline Town).		COLONY (excluding Freetown).		PROTECTORATE.	
		No.	Certified.	No.	Certified.	No.	Certified.
125 : 2	Hepatitis	1	1	...	...	1	1
125 : 2	Jaundice	...	...	14	...	...	...
125 : 2	Hepatic abscess	2	2	...	...	...	...
129	Peritonitis	3	2	1	1	...	...
130	Acute nephritis	4	4	...	...	...	...
131	Chronic nephritis	36	11	27	3	,,	...
132	Nephritis	...	...	6	...	...	...
135a	Cystitis	2	2	...	...	...	...
135b	Retention of urine	3	2	...	...	...	...
136a	Stricture	1	1	...	...	...	...
136a	Stricture of urethra	...	...	1	1	...	...
136b	Extravasation of urine	3	3	...	...	...	...
136b	Fistula of perineum	1	1	...	...	...	...
136b	Abscess of urethra	1	1	...	...	...	...
137	Enlargement of prostate	1	1	...	...	...	...
138	Abscess of scrotum	1	1	...	...	...	...
139a : 3	Parametritis	1	1	...	...	...	...
139b	Amenorrhœa	1	1	...	...	...	...
139b	Endometritis	...	...	1	1	...	...
139b	Uterine hæmorrhage	...	...	1	1	...	...
139c	Mastitis	1	1	...	...	...	...
140	Septic abortion	1	...	...	...	1	...
141 : 1	Ante-partum hæmorrhage	1	1	...	...	...	...
144b	Post-partum hæmorrhage	1	1	...	...	...	...
145a	Puerperal fever	4	...	2	1	1	1
145a	Puerperal sepsis	5	2	...	...	...	...
146 : 2	Uræmia of pregnancy	1	1	...	...	...	...
147	Toxæmia of pregnancy	4	3	...	...	...	...
147	Hyperemesis gravidarum	1	1	...	...	...	...
150 : 3	Childbirth	1	...	...	...	2	...
151	Carbuncle	1	1	...	...	...	...
151	Furunculosis	2	2	...	...	...	...
152 : 1	Cellulitis	1	1	...	...	...	...
152 : 2	Acute abscess	...	...	1	...	...	...
152: 2	Gluteal abscess	1	1	...	...	...	...
153	Bedsore	1	...	4	...	...	...
153	Ulcer of leg	2	1	9	...	...	...
153	Ulcer	1	...	...	...	...	...
153	Elephantiasis of scrotum	1	1	1	1	...	...
156b	Lumbago*	...	...	32	...	...	...
157b	Spina bifida	1	1	...	...	...	...
158	Congenital debility	10	3	7	...	...	...
158	Malnutrition	3	,,	...	...	...	...
158	Asthenia	2	...	...	...	...	...
158	Inanition	5	1	...	...	...	...
158	Marasmus	9	8	...	...	...	...
158	Hydramnios	...	...	1	1	...	..
159	Prematurity	77	5	7	1	1	...
160b	Cerebral hæmorrhage due to injury at birth	1	1	...	...	...	...
160b	Compression during birth	1	1	...	...	...	...
160b	Birth paralysis	1	...	...	...	...	...
161a	Asphyxia neonatorum	6	4	...	...	...	...
161a	Atelectasis	4	3	1	...	...	...
161a	Asphyxia livida	1	1	...	...	...	...
161c : 3	Hæmatemesis neonatorum	1	1	...	...	...	...
162b	Senility	103	...	73	1	7	...
163	Suicide by liquid poison	2	1	...	...	...	...
165	Suicide by hanging	1	1	...	...	...	...
168	Suicide by piercing instrument	1	1	...	...	...	...

*See note under Table F.

TABLE L—*continued.*

Causes of Death—continued.

International List Number.	Causes.	FREETOWN (including Cline Town.)		COLONY (excluding Freetown).		PROTECTORATE.	
		No.	Certified.	No.	Certified.	No.	Certified.
168 ...	Suicide by cutting instrument ...	1	1	...	...	...	...
175 ...	Homicide	...	...	3	3	...	...
177 ...	Food poisoning ...	1	1	...	...	...	...
181 ...	Conflagration ...	2	1	1	...	...	...
182 ...	Asphyxia	1	...	...	...	...	...
186 ...	Injury by fall ...	5	3	1	...	...	...
189 ...	Starvation	1	1	...	...	...	...
192 ...	Lightning	...	...	...	...	1	...
193 ...	Electric shock ...	2	2	...	...	...	...
194 : 2 ...	Misadventure ...	...	...	...	...	1	1
194 : 2 ...	Shock from injury received ...	1	1	...	...	...	...
194 ; 2 ...	Execution	2	2	...	...	...	...
194 : 2 ...	Accidental fracture of skull	4	4	...	...	...	...
195 ...	Found drowned ...	4	3	1	...	2	2
200 : 1 ...	Cardiac failure ...	78	5	40	8	10	3
200 : 2 ...	Abdominal disease ...	12	...	41	...	7	...
200 : 2 ...	Anasarca	2	...	6	2	...	...
200 ; 2 ...	Ascites	2	...	3	...	...	...
200 : 2 ...	Epidemic dropsy ...	4	3	6	6	...	...
200 : 2 ...	Debility	10	3	30	...	...	...
200 : 2 ...	Pyrexia of uncertain origin	1	1	...	...	...	...
200 : 2 ...	Hyperpyrexia ...	4	2	9	4	4	...
200 : 2 ...	Malnutrition (avitaminosis)	1	...	7	3	...	...
200 : 2 ...	Unknown or ill-defined	14	...	...	...	...	...

III—Prisons and Asylum.

KISSY LUNATIC ASYLUM.

Staff.—Medical Officer-in-charge
First Class Dispenser
Chief Attendant
Assistant Chief Attendant
11 Male Attendants
3 Female Attendants
1 Cook
4 Porters.

It is gratifying to be able to record a substantial decrease in the number of deaths during the period under review, this due no doubt to the cessation of that disease which had from time to time been called beriberi (serous pericarditis) and latterly epidemic œdema now attributed to a histamine poisoning caused by defective rice. Otherwise the figures are fairly constant, the number remaining in hospital at the end of the year being similar to that at the end of 1931.

The Male Visiting Committee made four visits and the Ladies Visiting Committee two visits during the year.

The following table gives the statistical details of patients during the year:—

	Males.	Females.	Totals.
Remaining in Asylum 31st December, 1931 ...	35	37	72
Admitted under observation	50	20	70
Admitted certified	2	—	2
Deaths among certified	15	9	24
Discharged after observation	31	11	42
Discharged as cured	1	1	2
Discharged on trial (Governor's Order) ...	4	3	7
Re-admitted	1	3	4
Absconded	—	3	3
Number of paticnts admitted	15	9	24
Remaining in Asylum 31st December, 1932 ...	39	33	72

The deaths, which number 24 as against 38 in 1931, were due to acute pericarditis with effusion with acute gastro-enteritis 7, tuberculoisis 3, chronic nephritis with and without chronic valvular disease of the heart, chronic heart failure, ruptured coronary artery, senile decay, acute hydrocephalus, etc.

REPORT ON THE FREETOWN PRISON.

Dr. C. B. Jennings was in charge of this station from the beginning of the year up to 11th of May. He was relieved by Dr. W. A. Burnett who continued until the 12th of December when he was again relieved by Dr. Jennings, with the exception of nine days from 27th May to 4th June inclusive, when Dr. R. D. Jones relieved him temporarily. Dispenser M. P. Neville continued as resident dispenser throughout the year.

Health of Prison Officers.

Europeans.—This was satisfactory; no one was placed on the sick list throughout the year.

Africans.—This was good: 39 were treated including 8 gaol employees and 2 females, 17 of whom were placed on the sick list (13 Government officials and 4 gaol employees), and 6 were sent to the Connaught Hospital—1 died and 1 was invalided from the Service.

Health of Prisoners.

The general health of the prisoners on the whole was good; there was only 1 death, occurred during the first half of the year; this took place at the Connaught Hospital, but the third quarter was an exceptional period when there were 6 deaths. 3 mild cases of chicken-pox were discovered and immediately isolated. 6 cases of epidemic dropsy, 4 of whom were admitted and 2 treated as out-patients; another suspected case was admitted under observation: he subsequently developed pericarditis and died. 152 cases were admitted during the year compared with 179 the previous year, 6 of whom were sent for further treatment at the Connaught Hospital; 3 of them were operated on by the Surgical Specialist for the following causes:—1 Perineal sinus, 1 strangulated hernia, 1 amputation of the middle finger.

793 new cases and 5,173 subsequent attendances were treated as out-patients, as against 788 new cases and 6,263 subsequent attendances in 1931. It should be pointed out, however, that there were some prisoners who reported daily in the dispensary with trivial complaints. These were given medicine as required and the number attended was entered in a separate book, and also the medicine administered. The prevailing diseases treated were malaria, gonorrhœa, bronchitis, dental caries, dyspepsia, constipation, ulcer, scabies, myalgia and local injuries.

There were 348 specimens of stools examined by the Medical Officer-in-charge of Laboratory, with the following results:—

Ankylostome ova ...	102	Strongyloides larvæ ...	33
Ascaris ova	48	Trichina ova ...	8
Tænia ova	2	No parasites	154
Other parasite	1		

1 condemned prisoner was executed during the year.

3 convicts and 2 remands were sent to Kissy under Emergency Certificates during the year.

The weight of prisoners ranged from 100 to 216 lb. A monthly record is kept of the weight of every prisoner from 6 months upwards and notice taken of any marked increase or loss of weight.

The total number of prisoners vaccinated during the year was 138, 111 of which were successful.

The sanitary condition of the prison was satisfactory throughout.

Quinine issued for prophylactic purposes to officials:—

European	1,000 grains
African	1,995 grains

Statistical Return.

In hospital at end of 1931	11
Admitted during 1932	151
Rmaining in hospital at end of 1932	4

——	March Quarter.	June Quarter.	September Quarter.	December Quarter.	Total.
Admitted	42	56	35	19	152
Cured	36	42	29	12	119
Improved and relieved ...	5	14	8	2	29
Not relieved	—	2	1	1	4
Died	—	1	6	—	7

Daily average number of prisoners	260·07
Daily average number of prisoners in hospital	6·25

——	New-comers Examined.	Remands Trial	Corporal Punishment.	Execution.	Solitary Confinement.
March quarter	132	28	1	1	70
June quarter	165	35	1	nil	49
September quarter	119	33	nil	nil	56
December quarter	180	58	nil	nil	58
Total	596	154	2	1	233

Out-Patients.

——	New Cases.	Subsequent Attendances.
March quarter	144	1,101
June quarter	217	1,444
September quarter	227	1,344
December quarter	205	1,284
Total	793	5,173

Freetown Prison.	1930.	1931.	1932.
Total number of prisoners admitted	902	913	749
Average strength	263	2?9	233
Total deaths	3	4	7
Total number of prisoners on sick list	186	179	152
Daily average number on sick list	6·8	9·1	6·25
Daily sick-rate per 1,000 of average strength ...	25·85	38·07	26·82
Death-rate per 1,000 of average strength	11·40	16·73	30·04

Prison.	Daily Average Number in Custody in 1932.	Daily Sick-rate per 1,000 of Average Strength.	Death-rate per 1,000 of Average Strength.
Freetown	233	26·82	30·04
Pujehun	39	34·10	—
Batkanu	21	123·80	—
Kenema	53	30·94	37·73
Moyamba	21	571·42	47·61

C. B. JENNINGS,
Medical Officer.

IV—Hygiene and Sanitation.

A—GENERAL REVIEW OF WORK DONE AND PROGRESS MADE.

1—Preventive Measures.

(a) Insect-borne Diseases.

Malaria.—4,857 cases were treated in the hospitals and 332 deaths registered as due to malaria in all reporting stations. The figures for Freetown for 1932 are 1,546 cases treated and 196 deaths, compared with 1,873 cases and 243 deaths in 1931. The number of deaths does not indicate a correspondingly high mortality from the disease, the majority of cases not attending hospitals or private practitioners for treatment. Nevertheless, 14 per cent. of the total deaths registered and 4·4 per cent. of the certified deaths at Freetown were recorded as due to malaria.

Malaria is undoubtedly the greatest predisposing factor in the mortality and morbidity rates amongst children throughout the whole Colony and Protectorate; and in the adult it plays a prominent part on its own account but chiefly as an influence in lowering resistance to other diseases.

Appendix E contains a summary of investigations carried out by the staff of the Sir Alfred Jones Laboratory and observations on the results of anti-mosquito measures at Freetown. This city has a lower concentration of infective anophelines than have the only two similar large towns on the West Coast for which comparable figures are available, viz. Lagos and Ibadan.

The anopheline infective density, i.e. the average number of infective anophelines per room per day in the various towns, was found to be as follows:—

Freetown	0·024
Ibadan	0·098
Lagos and suburbs	0·403
Kissy	0·844

Gordon and Davey have shown that in spite of very active preventive measures in Freetown resulting in a difference in the anopheline density of as 1 to 30 compared with the unsanitated native village of Kissy, the malaria infection rate of children in the schools in the hyper-endemic area of Freetown was reduced by only 11 per cent., i.e. from 92 to 81 per cent., and that owing to reinfections and relapses in Freetown the difference between saturation in Freetown and super-saturation in Kissy could not be distinguished by examining

the human population. To do so, investigations must be conducted amongst that section of the population that is exposed to infection for the first time: that is to say, the non-immune new-comer to the district, or else the infant population during the first few months of life. Examinations of school children at Freetown and Kissy during the most intensively malarious months of the year, both as regards the human infection rate and the anopheline infective density, showed that the difference in the anopheline infective density of the two localities was reflected in the human infection rates during the earliest months of life, this difference being most marked in the birth—three months age group (5 per cent. of children showing parasites in Freetown, compared with 52 per cent. in Kissy) and becoming less as the child grew older: 70 per cent. as compared with 93 per cent. in the twelve months age group. Gordon and Davey hold the view that a primary attack of malaria acquired during the first few months of life is more dangerous than one at an older and more resistant age. Thus young children in Freetown are rarely attacked during the first and most critical months of life, whereas in Kissy at least 50 per cent. are so attacked. Unfortunately, it is not possible to compare the infant mortality at Freetown and Kissy, as the village population of Kissy is not available, many births may have escaped registration, and interrogation as to the cause of death is not carried out by a medical officer as it is at Freetown, nor are the figures for Freetown reliable owing to so many deaths being registered without medical certificates.

The following extract from the report of the Medical Officer of Health indicates the nature of anti-malarial measures adopted:—

Extract from the Report of the Medical Officer of Health, Freetown.

(*a*) *Inspection of Compounds—Mosquito Larvæ.*—99,183 compounds were inspected as against 131,277 in 1931, the reduction being due to the necessity for posting sanitary inspectors on special duty in connection with smallpox as occasion arose. Mosquito larvæ were found in 225 compounds and the owners or occupiers prosecuted. There were 212 convictions and fines totalling £50 1*s.* 6*d.* were imposed. The larvæ found were as follows:—Aëdes 137, culex 87, anophelines 1; total 225. The figures represent the number of occasions on which larvæ were found; they were not present in combination on any occasion.

(*b*) *Oiling.*—149,568 pools, gutters and earth drains were oiled; the lower rainfall during the year and the fact that many new concrete drains were laid and repairs effected to existing drains provides the explanation for the reduction in the amount of oiling carried out. The oil used was a mixture of izal, 2 parts, castor oil 3 parts, kerosene 6 parts, and 29 parts of water. This proved very efficacious and cheaper than most mixtures used for this purpose, the cost being slightly less than tenpence per gallon.

Oiling is carried out mainly during the early rains, during the short dry spell which usually occurs towards the end of July or early August, and again when the rain falls less frequently and in smaller amount during the months of October and November. Drains, gutters, pools, puddles and seepage areas along the banks of the streams are oiled regularly and particular attention is given to the water which accumulates in the numerous hollows and flats which are without natural drainage. In May, June, July and September heavy rain falls almost every day, or very frequently with scouring effect, rendering oiling unnecessary except in the case of badly constructed cesspits which tend to breed mosquitoes then owing to excessive dilution of the contents by rain-water. In the dry season evaporation or soakage of casual water is very rapid and the water in the four main brooks is confined to narrow central artificial channels, which are constructed by the canalization gangs engaged each year after the last rains. This system of temporary canalization, which is effected every year and remains operative during the dry season, has proved the most economical and efficacious method of eliminating mosquito breeding. Unfortunately, the torrents resulting from the first heavy rains soon burst through these channels, which have to be reconstructed each year.

Sanders Brook has been replaced almost throughout its whole length by a permanent concrete canal which is capable of taking the entire wet weather flow of this stream and of the subsidiary concrete drains of adjoining streets which now open into it. The scheme to provide permanent canalisation for Alligator, Nicol's, Moore's and Granville's brooks and their subsidiary street drains had to be postponed owing to the need for economy.

Samples of larvæ found in pools, gutters and earth drains were as follows:—Anopheles 41, culex 4, aëdes 33; total 78. These figures are interesting in that they demonstrate the anopheline preference for breeding in pools, puddles, gutters, etc., rather than in domestic utensils and tree holes (*see* (*a*) and (*c*)), thus rendering preventive measures more difficult owing to the small size of, and difficulty in finding, the young larvæ and the much larger area of ground to be covered for draining, oiling or brushing out of pools and puddles.

(*c*) Particular attention was given, as usual, to clearing and regrading of earth drains prior to the onset of the heavy rains.

(*d*) *Inspection of Boats and Canoes.*—4,178 boats and canoes were inspected. No mosquito larvæ were found.

(*e*) *Inspection of Trees.*—6,853 trees were inspected; 1,162 holes found containing water were chipped and 2,326 were filled with a mixture of tar and cement. Samples of larvæ found in trees were: Stegomyia 30, culex 7, anophelines nil; total 37.

(*f*) *Clearance of Rank Grass and Weeds.*—House lots were kept free from bush by the owners or occupiers; long grass and weeds in other situations were cleared periodically by the Health Department or the Survey Department.

(*g*) *Collection of Tins and Bottles.*—Special gangs are taken on for this purpose during the early and heavy rains. They cover the whole of the Municipal area once in every five days, thus eliminating a potent source of mosquito breeding.

The larval-indices ascertained at the end of each quarter were as follows:—

First quarter	0·28
Second „	0·57
Third „	0·57
Fourth „	1·43

In the health areas of the Colony and Protectorate preventive measures are carried out along similar lines, though necessarily on a reduced scale (*see* Daily and Monthly report Forms for health areas attached herein).

Filariasis.—296 cases of elephantiasis were treated in the hospital and dispensaries, this figure representing but a small percentage of the number of cases existing and not applying for treatment. No figures are available for the other forms of filaria.

Preventive measures are similar to those adopted against malaria and are detailed in the last section.

Table II in Appendix E shows the results of dissections of mosquitoes for filaria in Freetown and Kissy.

Yellow Fever.—Sierra Leone remains singularly free from the clinically recognizable form of this disease. No cases have been reported since 1910.

During the year under review a biological examination of sera taken from persons at Freetown in the Colony, Bo and Moyamba on the railway line in the Southern Province, and Makeni also on the railway line in the Northern Province, was undertaken by the Yellow Fever Commission of the Rockefeller Foundation at Lagos. The following is an extract from the report of the Director of the Commission on the sera tested, with initials substituted for personal names and the map referred to therein deleted for economy's sake: "I trust the enclosed map will give you what you require. You will note that the figures for Freetown are in black and red type. The former covers the original test carried out on the serum of children from that town when a single specimen from a small child, L.L., was positive. Test No. 134, on the other hand, was recently carried out on the sera of 39 adults aged 18 to 46 years, and you will note that 22 per cent. of these sera were positive. We judge from these findings that the persons whose serum showed protective properties were infected with yellow fever before 1910 when a water supply was introduced and an effective sanitary service inaugurated. The youngest positive donor in this series was Miss B. A. S., 24 years of age, whose blood protected all mice. The other positives were:

J. T. P.	38 years
E. N.	52 „
A. B. K.	28 „
N. B.	33 „
S. L.	38 „
J. P. N.	33 „
G. L. W. T.	39 „
S. M.	43 „

"Fifteen sera from children residing in Bo, aged 12 to 14 years were tested and none of these showed any protective properties.

"Sera of 25 persons aged 12 to 15 years from Moyamba gave the following results: Positive 6 (24 per cent.), negative 19 (76 per cent). The youngest positive was from a child, J., 12 years of age, and the other positives were from donors 13 to 15 years of age. It seems quite evident that an epidemic has occurred in this town more recently than in Freetown.

"Thirteen sera from persons 17 to 22 years of age from Segbwema were tested and one of these was positive, S., a female 20 years of age.

"The sera of 23 persons from 7 to 15 years of age residing in Makeni were also tested. These were negative with two exceptions: M.S., 7 years, and R.K., 15 years, of age.

"I think it is evident from the results of these tests that some yellow fever has been present in the interior of Sierra Leone more or less recently, and that the fine showing made by Freetown is due to the excellent sanitary service there and the fact that the town has an ample water supply."

If this biological test proves to be infallible as a test for acquired immunity to yellow fever, it seems probable that Sierra Leone will be adjudged to be an endemic area for the purposes of aerial navigation.

In Appendix E reference is made to the species and numbers of culicini captured during a mosquito survey of Freetown and Kissy and a comparison made between the density of vectors in Freetown, Kissy and Lagos.

(*b*) Epidemic Diseases.

Plague.—No cases were notified during the year and the routine examination, both macroscopic and microscopic, of 1,345 rats failed to demonstrate B. Pestis.

Rats purchased by the Health Department up to 15th August numbered 15,600. The expensive system of purchasing rats from private individuals then ceased and a rat-catcher was constantly employed de-ratting premises, warehouses, Customs sheds, etc. No increase in the number of rats and no incidence of epizootic disease was discovered during the year.

Very careful supervision is maintained over cargo being discharged at Freetown from ships which have called at plague-infected ports, to prevent the possible ingress of infected rats from ships *via* lighters; and regular inspections are made of all lighters in the harbour for the presence of rats.

From the point of view of plague prevention the absence of a wharf to accommodate ocean-going vessels must be regarded as a factor of the first importance.

As during previous years, strict inspection and disinfection of deck passengers and Kroo labourers was carried out to prevent infection of the port from outside sources. The Washington-Lyons high pressure disinfector deals in a capable manner with this question and during the year 3,617 persons and their effects were dealt with.

Smallpox.—After a period of ten years practically free from the disease, smallpox again made its appearance in epidemic form. During the year, 998 cases were discovered in the Colony and Protectorate, with only twenty deaths, the disease being of a comparatively mild type—*see* Table "A" in Appendix G. The total number of vaccinations performed during the year was 266,147, as follows: Colony including Freetown, 97,711; Protectorate—Northern Province 86,785; Southern Province 81,651.

Detailed information as to the origin, spread and progress of the epidemic *up to the end of August*, and preventive measures adopted, is contained in the following report of the outbreak submitted by the Assistant Director of Health Service for the Office International D'Hygiene Publique (Appendix G). The table attached thereto (Table "A") shows the total number and distribution of cases which were discovered in each district *throughout the year.*

Incidence and Source of Infection.

"After a period of years during which the Colony of Sierra Leone has been free from smallpox infection, the report of a case of smallpox in the Colony village of Murray Town on 20th February, 1932, was the first indication of the extensive outbreak which subsequently followed. Early in March, reports of a widespread epidemic were received from the Kambia District in the north-western portion of Sierra Leone, contiguous with the French boundary. It would appear that a dispenser had, in the first instance, mistaken these smallpox cases for chicken-pox. The priority of these cases in the Kambia District, their epidemic character and density, combined with the information subsequently elicited by Mr. Herd, Chief Sanitary Superintendent, during his work in that area, undoubtedly prove the source of the infection to have been from French Guinea. A second and subsidiary infection certainly entered Sierra Leone in the south-eastern portion of the Colony, where it is contiguous with the French and Liberian borders.

Spread of Infection and Factors Predisposing to Same.

(*a*) *Primary Focus.*—The infection having penetrated over the French border, and having rested there what time it gained a firm hold, then travelled in a south-easterly direction along the bush tracks and cattle routes connecting the Kambia District with industrial areas and commercial centres; and by sea in a southerly direction from the Great Scarcies River to the Bullom ports and Freetown. It must be borne in mind that the whole of the north-western border is the source of entry for the main supply of cattle to the Protectorate of Sierra Leone, and that in this year, the continuance of intermittent rains throughout the normally dry season had, by the provision of ample grazing, enabled this traffic to carry on beyond the normal period. Another factor was the gradual movement to the mining areas of labourers attracted by regular pay and employment.

Yet another factor was the seasonal movement of rice planters to their farms at the mouth of the Great and Little Scarcies rivers, where much of the swamp-rice is grown.

Its further spread to Freetown by sea-borne traffic can easily be envisaged when one realizes the enormous amount of agricultural produce, fuel and cattle, etc., which normally reach Freetown from the Bullom shore. There would appear, too, to be a big bartering trade carried on over this border, whereby the natives of Sierra Leone exchange kola nuts for French Guinea cattle, a trade which reaches its height in April.

(*b*) *Secondary Focus.*—At the end of March a case was detected at Giehun in the Kailahun District of the Southern Province. This man reported that he had but recently crossed over from Liberia, and that he had seen many cases there. It is a fact that French subjects can be seen in the market place at Kailahun on any market day. This area too, is a source of entry for cattle, and it is worthy of note that it was in this district that a serious outbreak of bovine pleuro-pneumonia occurred in 1930. This epidemic animal disease was definitely traced to French country.

Converging towards Pendembu on the Sierra Leone railway the infection spread feebly along the railway line to Bo, the chief commercial town, where it was held in check by the sanitary measures then in force (Appendix H). The attached map of Sierra Leone shows graphically the sources of entry, the density of cases, the spread along the normal lines of traffic and the vaccinations performed in every district affected, whilst Chart "A" gives in graph form a fortnightly record of the cases reported, and a tabulated list of the infected districts, the total cases in all districts and the number of vaccinations performed by the staff.*

Type of Infection.

Mainly of a mild and discrete type, very few confluent cases were seen, and no hæmorrhagic cases were reported. The case mortality rate was very low, though it is admitted that the figures reported for the Northern Province can be regarded only as semi-accurate.

Course of Infection.

A—Freetown and Colony.

In Freetown there were 19 cases in all, of which 12 were indigenous; in the Colony there were 8 cases which were undoubtedly contacts with the cases occurring in Freetown. The dates of the cases occurring in Freetown and the Colony are shown in Table A.

Owing to the occurrence of two cases in Freetown on 26th February it was necessary to put the Port in Quarantine, whilst at the same time active anti-smallpox measures were instituted. It is therefore interesting to note thai notwithstanding the intensive house to house inspection for the detection of infection no further case was observed in Freetown until 3rd April, whereas in the Colony cases were discovered throughout March. These can undoubtedly be accounted for, by the people running away from Freetown to their native villages in order to avoid vaccination. Freetown was declared clear on 22nd March, but owing to further cases falling within the internationally agreed quarantine period, it was again necessary to declare Freetown infected during the period 7th April to 3rd June.

When one considers the relationship of Freetown with the infected areas, and bearing in mind the fact that infection could reach Freetown by road, rail and sea, it is gratifying to record that in the Colony peninsula the active measures taken exercised such control of the disease that only twenty-three indigenous cases occurred among a population of approximately 96,000, of which more than 55,000 live in Freetown in conditions of house and population density greatly conducive to the spread of the disease.

B—Northern Province.

As was to be expected, owing to the source of infection and the nomadic habits of the people, the Northern Province bore the brunt of the infection both as to incidence and the size of the area affected. The distances are great, the medical stations and dispensaries far apart, and the population not even as yet accustomed or willing to submit to European medication, still nervous of reporting diseases, and still averse to, and unwilling of, co-operation in any compulsory measures for the eradication of diseases when once detected.

Commencing in the Kambia District as a central focus of infection by virtue of the facts already mentioned, the disease spread fanwise in a south-easterly to southerly direction along the main lines of communication with the establishment of subsidiary foci in those districts and towns upon which the traffic normally converges. These centres apart—*see* Table "A"—numerous cases must undoubtedly have occurred in the many villages and fakais lying away from the main routes which the paucity of staff and reticence of the people made difficult to locate. Spreading out from the central focus in the Kambia District

* Tables A and B and a simple map of Sierra Leone have been substituted for the sake of economy. *See* Appendix G.

it is interesting to note the diminution of cases. Thus, in the Kambia District there were 509 cases, in Karene 173, in Bombali 85 and Port Loko 75, whereas not one case was detected in the widespread Koinadugu District, an area which from its topography and from the habits of its people does not come into such intimate contact with the rest of the country as do other districts.

C—Southern Province.

The infection commencing as it did on the eastern border never arose to alarming proportions, and from the nature and habits of the people did not spread so diffusely as the northern infection. The Southern Province is also much better supplied with road and rail transport, thus the movement of produce and merchandise is much better organized along these arterial communications. There is not therefore the mass movement of people as in the north except along well-defined routes which can easily be controlled, thereby greatly eliminating the risk of dissemination into outlying villages with its subsequent concealment and continuation of the spread of infection. Only 103 cases occurred in the Southern Province as against 842 in the Northern Province during the period February to August.

Notwithstanding this disparity in figures, it is interesting that the dates of the peak points of infection coincide very closely with those of the Northern Province—*vide* Table "A" in Appendix G.

The foregoing statements with reference to the Colony and Protectorate as to infection, density and spread are quite clearly shown on the attached map of Sierra Leone.

General Review.

Reference to Table " A " will readily show that the peak point of infection occurred in the April–May period, and that thereafter a very sharp decline in infection took place, due no doubt to the sanitary measures instituted, and in a large measure aided by the increasing absolute humidity, which Sir Malcolm Watson has shown to be a potent factor in causing a diminution of epidemicity in India. At the time of writing only sporadic cases are occurring in the Northern Province, whilst none are being reported from the Southern Province and Colony.

Measures Taken to Combat the Epidemic.

(*a*) *General.*—These resolved themselves into the time-honoured measures of—

1. Detection and isolation of cases.
2. Rounding-up and isolation of contacts.
3. Fumigation (and where possible the destruction) of infected premises.
4. Intensive vaccination.

(*b*) *Northern Province.*—At the time of the outbreak the following staff was resident in that portion of the Northern Province adjacent to the area where the epidemic arose:—

a. Medical Officer, Port Loko
b. Dispenser, Port Loko
c. Sanitary Inspector, Port Loko
d. Medical Officer, Makeni
e. Dispenser, Makeni
f. Sanitary Inspector, Makeni
g. Dispenser, Kambia
h. Dispenser, Batkanu.

These officers were instructed to carry out the instructions detailed above in their districts, and in addition the Medical Officer, Port Loko, was detailed to proceed to the area between the Small Scarcies and Sierra Leone rivers where infection was reported to be heavy. The Medical Officer, Makeni, was sent into the Karene District on a survey and treatment trek, and the Medical Practitioner attached to the Sierra Leone Development Company at the hæmatite mine at Marampa zoned his own area and with the assistance of two Government Sanitary Inspectors, vaccinated the labour and all new-comers arriving in the concession There were thus active anti-smallpox measures being carried on in the affected area and on the main routes of communication, a barrier of vaccination posts existed at main convergence centres preventing the spread further afield. Mr. Herd, Chief Sanitary Superintendent, made two survey and treatment treks in the infected areas in the Kambia District, and in virtue of the importance of the Bullom shore to Freetown he also surveyed that area.

In all, a total of 842 cases were detected in these infected areas and 82,074 vaccinations performed. Cases and contacts were isolated separately in specially constructed camps at a suitable distance from villages in which they were found. Notwithstanding the employment of Court Messengers of the same tribe as those people in the infected areas, it was found most difficult to induce the people to accept vaccination, and almost impossible—with few exceptions—to induce them to notify new cases. In the outlying villages the appearance of an European was in most cases a signal for the evacuation of the village.

Only by a policy of continuous propaganda can the value of co-operation in combating infectious diseases be brought home to these uneducated and suspicious people; any attempt at coercion or compulsion by legislative means would probably defeat the object.

(*c*) *Southern Province.*—At the time of the outbreak the following staff were resident in the Southern Province:—

Medical Officers ...	...	6—Daru, Bo, Moyamba, Pujehun, Sumbuya, Bonthe.
Dispensers ...	...	13—Mano, Bo, Kenema, Moyamba, Bauya, Mabang, Pendembu, Kailahun, Daru, Pujehun, Sumbuya, Sulima, Sherbro.
Sanitary Inspectors	...	7—Moyamba, Sherbro 2, Sumbuya, Bo, Daru, Sefadu.

Commencing as it did in the Giehun-Pendembu area, extra vaccinators were sent up to the Kailahun District with the object of limiting the spread along the railway line and system of roads, which run in a south-westerly direction. That this measure was successful was evidenced by the fact that although 91 cases occurred at the primary focus of infection, the inspection and vaccination of intending travellers proved such an effective barrier that only 11 cases occurred along the railway line, and the infection did not spread beyond Bo. One case did occur at Moyamba but investigation elicited the fact that the man had travelled down from the Port Loko District. A total of 45,827 vaccinations were performed and the usual measures of isolation of cases and contacts were carried out as elsewhere. At the time of writing no further cases are occurring in the Southern Province.

(*d*) *Freetown and Colony.*—Apart from the port of Bonthe, Sherbro Island, Freetown may be regarded as the main port through which manufactured goods enter and are distributed to the remainder of the Colony and Protectorate, and the main point of outlet for agricultural produce. As has already been shown, Freetown was thus subject to sea-borne infection from the Bullom shore, and to rail infection from both Northern and Southern Provinces.

The epidemic arose at a time when the products of the provinces were at their peak point of export. There was therefore greater passenger traffic in the essential transaction of business. A heavy infection of Freetown would have largely paralized shipping, or would at least have so incommoded the working of ships as to have caused a considerable drop in the movement of merchandise with a consequent loss of revenue. It was thus essential that the most active and strenuous anti-smallpox measures should be undertaken in Freetown and its environs. In addition to those measures already enumerated in respect of the provinces, the following steps were taken by the Health Department in Freetown:—

(*a*) Letters pointing out the dangers of smallpox and its means of prevention, and requesting active co-operation, were sent out to the following:—

Heads of all Government departments.
Agents of all Shipping lines.
Mercantile Firms and Banks.
Educational Bodies.
Missionary Societies.

(*b*) Articles along the same lines as the letters in (*a*) were inserted in all local newspapers and periodicals.

(*c*) A central vaccination depot was opened, staffed and widely advertised. Vaccination parades were held at all Government offices and the chief offices of the commercial and shipping communities at which all staffs were vaccinated. Similar parades were held at all schools in Freetown.

(*d*) To prevent sea-borne infection the whole of the foreshore available for canoe landing was policed day and night by sanitary inspectors, public vaccinators and supernumerary constables. To prevent rail infection, all trains arriving in Freetown were met by a similar staff. Thus, no one could enter Freetown by rail or sea without showing either previous vaccination, former infection by the disease, or a certificate of recent vaccination, or without being vaccinated on arrival.

(*e*) For the protection of shipping, all ships in the harbour were policed, visitors from ship to shore were not allowed, and visitors to ships were allowed only on permit. It is here worthy of note that no ship working in Freetown harbour was infected from this source although a total of 333 ships entered and cleared the port during the period under review. All Kroo labourers and deck passengers were examined prior to embarkation, and no permits were issued for boarding in the absence of recent vaccination, the shipping firms co-operating in this, by refusing to employ any unvaccinated labour. Further, all baggage was disinfected at the disinfecting station, Government Wharf. All Kroo labourers and deck passengers landing at the port were similarly treated. A total of 7,800 Kroo labourers and deck passengers were so handled.

(*f*) All cases were conveyed by the most convenient route—i.e. by sea or road—to the Isolation Hospital at Kissy and there treated. Twenty-eight cases indigenous and imported were so treated, whilst one child too young to be separated from its mother contracted the disease while the parent was in hospital. There were no deaths.

(*g*) All contacts were rounded-up and conveyed by a lorry to the Quarantine Station at Cape Sierra Leone, and were there disinfected, housed and fed during the period of isolation. The number of people so treated was 153. No contacts developed the disease while isolated. The total cost of this service was £76 9*s*.3*d*., or a cost of approximately 10*d*. per person per diem. Houses in which cases were detected were most carefully and thoroughly disinfected, and had a guard of supernumerary constables placed over them.

(*h*) Owing to the reluctance of the uneducated population to seek medical aid, many people died without the cause of death being certified. Although this gives no cause for alarm in normal times, the inspection of the bodies of all persons dying without a medical certificate showing the cause of death was considered advisable during the epidemic. Such inspection revealed not one case of smallpox infection.

The staff employed in Freetown during the epidemic was—

(1) The Assistant Director, Health Service, 1
(2) The Medical Officer of Health, 1
(3) Sanitary Superintendents, 2
(4) Sanitary Inspectors, Grade II, 1
Sanitary Inspectors, Grade IV, 2
Sanitary Inspectors, Grade V, 12
Sanitary Learners, 4.
(5) Medical Officer and staff, Infectious Diseases Hospital.

This was supplemented by 35 supernumerary constables when and where necessary.

In conclusion, it can be stated that no indigenous cases of smallpox have occurred in Freetown since 2nd July.

In the period under review, in Freetown and the Colony a total of 82,618 vaccinations were performed on a population of approximately 90,000, the discrepancy between these figures being accounted for by (*a*) persons showing fairly recent successful vaccinations, and (*b*) children under three months and adults over sixty-five who, by notice published in the *Gazette*, were exempted from compulsory vaccination, while it must be noted that these figures include a considerable floating population.

Finance.

In the purchase of lymph and other vaccination necessaries, the payment of supernumerary court messengers and constables, the cost of transporting Europeans, sanitary inspectors and vaccinating impedimentta and the payment of travelling allowances to officers engaged in vaccination campaigns, and the cost of the upkeep of patients and contacts, comes to a total of £2,056 1*s*.10*d*. or 2·33*d*. per vaccination, exclusive of routine personal emoluments, a remarkably low rate when considering the difficulties to be faced.

Points of General Interest.

Aided by an emergency supply so readily loaned by the Honourable Director of Medical and Sanitary Service, Gold Coast, the quantity of lymph proved adequate and of excellent quality. The percentage of successful vaccination in those series where re-inspection was possible approximates to 98 per cent. Only four cases of generalized vaccinia following vaccination were observed. The case morbidity rate of cases treated in the Colony was nil, and although no reliance can be placed on the case mortality rate forwarded from the provinces, the infection was undoubtedly of a mild type.

Although the epidemic has been handled by the Health Department without any increase of staff other than court messengers and supernumerary constables, it must be pointed out that such emergency work leads to disorganization of a staff only barely adequate to carry out essential services, thus resulting in a general lowering of the standards of sanitation. And although the epidemic has now passed away, security can be achieved only by the continuance of a vigorous campaign of vaccination, while immunity from mass infection can be expected only when 1,000,000 people have been so vaccinated, and thereafter an annual figure of 50,000 has been maintained to cope adequately with the natural increment of life. These figures cannot be achieved without the willing and active co-operation of the people.

It is with pleasure that one can report the loyal co-operation of Provincial Administrations and the subordinate staffs employed by them, in facilitating the work of this department. I have to record the excellent work of Dr. Monks, Senior Health Officer, and the Health staff, in the active offensive carried on against the epidemic, and finally to acknowledge my indebtedness to Mr. G. V. Herd in the drawing-up of the maps and charts and the eliciting of the enclosed data without which this report could not have been presented in its present concrete form.

J. A. A. DUNCAN,
Assistant Director, Health Service."

Dysentery.—Cases notified were 307, and deaths registered in reporting stations 95; compared with 330 cases and 55 deaths in 1931. These statistics are of little value even for reporting stations, as many cases do not attend for treatment and registration of deaths is optional in the Protectorate.

Preventive measures consist in efficient disposal of refuse and night-soil and steady improvement of water supplies when funds are available. Propaganda directed towards these ends and domestic hygiene as regards food, etc., is also carried out.

Enteric Group.—13 cases and 3 deaths occurred during the year, all in Africans in the Colony special districts. Owing to the lack of facilities for establishing a definite diagnosis in places apart from Freetown, no estimate can be given of the prevalence of this group of diseases.

Preventive measures are identical with those outlined above for dysentery.

Tuberculosis.—This disease was made compulsorily notifiable in January, 1931, in which year the cases notified increased by over one hundred per cent.

In 1932, 219 cases with 78 deaths were recorded, of which 95 cases and 5 deaths occurred in the Protectorate. These figures are no indication of the prevalence of or mortality from the disease; lean years tend to bring to hospital cases of tuberculosis which in normal times would never have reported, and only a percentage of the deaths recorded are registered on medical certificates.

Houses where cases or deaths have occurred are disinfected and examination of contacts made for early signs and symptoms. Advice is also given to patients and their relatives as regards ventilation, disposal of sputum, and the necessity for the patient to occupy a separate room and use separate utensils.

(*c*) Helminthic Diseases.

The following table shows the position as regards hospitals and reporting stations for 1931 and 1932.

Disease.	1931. Cases.	1932. Cases.
Ankylostomiasis ...	84	185
Ascariasis	3,376	3,847
Schistosomiasis	17	59

1 death in Freetown and 1 in the Colony were registered as due to ankylostomiasis and helminthiasis, respectively.

The provision of efficient means of disposal of night-soil, and prevention of indiscriminate defæcation and contamination of water supplies, are the methods adopted against these diseases. Appendix E contains a note on the examination of school children in Freetown for schistosomiasis.

(*d*) Animal Diseases.

Rabies.—The following note relative to the occurrence of two cases of rabies is furnished by the Director of the Sir Alfred Lewis Jones Laboratory at Freetown:—

"There appears to be no previous record of the occurrence of rabies in Sierra Leone, in spite of the fact that numerous cases have been reported from French Guinea.

"*Case 1.*—In February, 1932, two Europeans in Freetown together with their native servants, were bitten by a cat showing signs of rabies. Sections of the animal's brain showed the presence of Negri bodies in the ganglion cells.

"*Case 2.*—In December, 1932, the brain of a dog from Mano was examined, which had bitten four natives before it could be killed. Negri bodies were demonstrated in sections of the brain, and the disease transferred successfully to guinea-pigs. The infection of these guinea-pigs is of some interest since the virus survived a 36-hours' journey in the hottest season of the year."

Apart from the diseases revealed by the examination of cattle at the Freetown Slaughter-house—*see* section 7—no further cases of epizootic disease were notified during the year.

2—General Measures of Sanitation.

Sewage Disposal.—Since the last report no change has taken place in the sewage disposal methods in use in Freetown. Cesspits, of which there are approximately 5,000, continue to serve the majority of the inhabitants and, as before reported, do not cause the amount of trouble which might be expected. They are regularly supervised by the Sanitary Department and, when necessary, fumigated or oiled. A few private residences, all Government bungalows, Police lines and Military barracks are served by the pan system. In the Protectorate the use of the Salda latrine is almost without exception.

Refuse Collection and Disposal.—The new alternative scheme of this service, which was fully outlined in the report of 1930, has now been in operation for more than a complete year. From the sanitary point of view and from that of economy the scheme has been an unqualified success. Less labour is used, more ton-miles have been run, no nuisance has been caused and the cost per ton for collection and for ultimate disposal, including all cash disbursements made by Government, now works out in 1932 at 3*s.* 3*d.* as opposed to the 10*s.* 6*d.* which was the cost of the scheme in operation in 1929. Greater economies could be effected by the expenditure of capital money in improving the disposal dump at Allen Town. This at present is a temporary and makeshift arrangement necessitating the use of 8 labourers to assist the falling of the refuse down the hillside. A trestle jetty run out at right angles from the hill face, thus enabling the refuse to fall with a sheer drop, would abolish the necessity for these labourers; but in the present financial condition of the country the capital expenditure cannot be faced.

As before stated, no nuisance has been caused, and though it was expected that the breeding of rats would be facilitated, in practice this has not been found to be so, as during the dry season, which occupies the greater part of the year, the main dump burns furiously, and it is only well on into the wet season that the fire is extinguished, and even then the internal heat of the main dump remains such as to prevent the harbourage of rats.

The number of loads carried in 1932 was approximately the same as that carried in the former year, being but a few hundreds in excess. The fleet of lorries which is now in its sixth year causes more and more trouble, loss of time, loss of efficiency, and increased cost of repairs owing to its age and the unsuitable type of lorry originally purchased. Nevertheless, it was possible to reduce the running and maintenance cost from £1,000 to £800 p.a.

Drainage and other Sanitary Improvements.—No major works of importance have been carried out during the period under review. The activities of the Health Department have been restricted to the weeding and regrading of earth ditches. At Bonthe an attempt was made at land reclamation by the dumping of the town refuse in the shallow waters which encroach on the town. This is still in the experimental stage, and reference will be made to it in a subsequent report.

The extension of mining activities in the Protectorate, with its conglomeration of labour at the foci of work, brought with it the necessity for sanitary intervention at those sites. Adequate measures have been effected for the control of these people, and it has been greatly facilitated by the amicable relations existing between Government and the various mining companies concerned; in particular one must mention the praiseworthy efforts made by the Sierra Leone Development Company at their permanent encampment at Marampa for the housing of their clerical staff and a good number of permanent labourers to be employed. The houses are carried out in concrete, adequate sanitary provisions are made by means of concrete pan latrines, a pipe-borne water supply installed, also a market and incinerators. Other mining companies are at present in the experimental stage, but it is felt that when once their location is fixed they too, in collaboration with Government, will provide housing for their labour which will compare most favourably with that to be found in other West African colonies.

Under the Public Health (Protectorate) Ordinance, Sumbuya, Marampa and Pepel were declared Health Areas in 1932, bringing the total number of these areas up to thirty-six. The Public Health (Protectorate) Rules have been applied to all of them. In addition, special Rules were drawn up and applied to regulate the sale of meat and foodstuffs and to prevent overcrowding of dwelling-houses at Marampa and Pepel; and preliminary steps were completed for the declaration as Health Areas of the mining villages and camps of Maroc Ltd. at Makong and Sierra Leone Goldfields Ltd. at Maranda. Replicas of the sanitary report forms used in the Protectorate (attached) indicate the nature of the provisions of the Public Health (Protectorate) Ordinance.

Having now declared many important towns and villages as health areas in the Protectorate, it is hoped in 1933 to post a whole-time Sanitary Superintendent for the duty of inspecting and advising the necessary measures in the said health areas. I think it can be safely stated from one's experience that the Protectorate chiefs, in so far as their funds permit, are quite willing, and indeed eager, to carry out the simpler forms of sanitation, and to erect essential sanitary structures, when once they are advised what is necessary and some actual assistance in the way of direction is given to them by a competent man. Reference to the progress made will be made in the 1933 Report.

3—Water Supplies.

Apart from the maintenance of supplies already instituted, no advance in water supplies was made during the year owing to the financial depression which is affecting Sierra Leone in a measure equal to that in which it has affected the rest of the world. The Engineer of the Freetown Waterworks reports as follows:—

"In submitting this short annual report on the Freetown Waterworks for the year 1932, I have to state that all sections of the works were maintained in a high standard of efficiency during the year and that steps were taken to reduce all avoidable waste of water.

"*Consumption.*—The total consumption for all purposes during the year was 173,537,000 gallons as against 171,214,000 gallons the previous year, that is an increase of 2,323,000 gallons; the average daily consumption was 474,147 gallons. The supplies to shipping amounted to 3,190,650 gallons as against 3,235,000 gallons the previous year and supplies for trade and other non-domestic purposes, to 4,097,270 gallons as against 5,511,000 gallons the previous year. The supply for purely domestic purposes for the year was therefore 166,249,000 gallons, an average of 454,232 gallons as against 162,468,000 and 445,000 gallons respectively for the last year. The maximum daily consumption was 620,000 gallons on the 6th of February and the minimum daily consumption was 284,000 gallons on the 26th February on which day there was a rather heavy rainfall.

"*Private Services.*—23 private services were laid during the year. Deducting those that were disconnected for one cause or another, there were 465 private services with 985 taps at the close of the year. There were 88 Colonial Government services with 413 taps at the close of the year.

"*Public Standposts.*—Four new standposts were erected during the year at the following points:—

(1) Regent Street junction with Circular Road.

(2) Charles Street junction with Henry Street.

(3) Williams Street.

(4) Albert Street.

There were at the close of the year 233 public standposts.

"*Distributing Mains.*—These were efficiently maintained during the year. 109 yards of 3 inches C.I. distributing main with fire hydrant were laid at Little East Street during the year, thereby providing an efficient supply of water in case of outbreak of fire in that area. No lowering of distribution main was taken during the year under review.

"*Protection and Preservation of Steel Main from Lumley Valley.*—811 yards of the Lumley Valley $8\frac{1}{2}$ inches steel main from Westmoreland Street junction with Upper Waterloo Street to the Service Reservoir at Tower Hill were unearthed, scraped and treated with double coat of Bistumastic solution and a coat of Bistumastic enamel. This should add greatly to the life of the pipes.

"*Shortage of Water.*—There was no shortage of water during the year under review, the rainfall the previous year being comparatively heavy—as much as 172 inches being registered by the rain gauge at the Congo Valley. Also there was rain every month of the dry season, i.e. from October, 1931 to April, 1932.

"*Pumping Operations.*—There were practically no pumping operations during the year, there being no necessity; pumping was started on the 31st March, but was stopped after three hours owing to a heavy downpour of rain.

"*Gauging of Streams—Possible Sources of Water Supply to Freetown.* During the early part of the year, this department examined two tributaries on the right bank of the Orogu River; the Takuyama at Regent and the Kongo at Bathurst, as possible sources of augmenting the water supply in the future. Rectangular "V"

Notch Gauges were fixed across them at altitudes of 830 and 760 feet respectively above mean sea level. Readings were taken and the minimum flow on the 7th of April was—

Takuyama—217,000 gallons per diem.
Kongo—117,900 gallons per diem.

As the last dry season was an abnormally wet one, the above readings do not indicate the minimum dry weather flow in an abnormally dry year which is the most valuable information required. It is proposed to continue the gauging of these streams towards the end of this dry season. Another tributary of the Orogu which is situated below the village of Charlotte was also examined, and the erection of a " V " Notch Gauge across it at the altitude of about 460 feet above sea level was almost completed when the rainy season prevented further progress of the work. This will be completed this dry season and readings taken in conjunction with the other two. Until records of these gauges are taken for a series of years, the value of these streams as possible sources of supply for Freetown cannot be correctly estimated."

4—School Hygiene.

Apart from an inspection, both medical and sanitary, of six schools made by the Senior Health Officer during a general inspection of Bonthe, and routine sanitary inspection of school surroundings by Sanitary Inspectors in the Colony and Protectorate, no regular school inspection was carried out during the year owing to shortage of staff. It is hoped next year to resume routine sanitary inspection of schools by the Medical Officer of Health at Freetown and by medical officers at outstations, and also medical inspection of school children in so far as this can be arranged without unduly interfering with ordinary medical duties.

5—Labour Conditions.

In Sierra Leone, the main industry being agriculture which is carried on by individual farmers who utilize only the services of their families, and do not employ labour, the only people who might fall under this section are the Kroomen who regularly serve ships calling at Freetown, and the population of the Protectorate, who, attracted by regular pay, have wandered to mining centres which are now gradually setting up in the Protectorate.

The continued world-wide depression greatly affected the number of ships calling at Freetown, and thus directly affected the number of Kroomen engaged. Furthermore, the gradual closing down of the constructional works of the Sierra Leone Development Company at Pepel and Marampa, and on the railway line connecting those two points, resulted in a decrease of labour employed.

As has already been stated under the General Measures of Sanitation section, adequate provision, either temporary or permanent, has been made by the mining companies for the housing of the labour employed by them; and enterprising chiefs in the villages adjacent to these centres of work have enlisted the aid of the Sanitary Department for the laying out of extensions of their villages which had in many cases expanded beyond their normal bounds owing to the influx of outside labour.

It is gratifying to record that in those camps and villages where the population has risen often by as much as 300 per cent. in the course of a few months, no epidemic or preventable disease on a large scale has occurred.

6—Housing and Town Planning.

With the exception of those activities mentioned under the two former headings, housing in the Protectorate remains as it was. It is hoped that the periodical visitation of health areas by a Senior Sanitary Superintendent will induce the people of the Protectorate to build better ventilated, better lighted and more hygienic houses.

In Freetown it must be reported with regret that the Health Department does not in any way at present enter into the building activities in progress. The Freetown Improvement Ordinance is administered by the Public Works Department and in the present operation of the provisions of that Ordinance the Health Department has no say.

7—Food in relation to Health and Disease.

The position as regards food inspection was fully outlined in the report for 1931, and reference made therein to the special facilities existing for training the sanitary staff in meat inspection. At Freetown the number of animals slaughtered was as follows:—

Bullocks	...	...	...	...	2,904
Sheep	...	...	...	...	214
Goats	...	...	...	...	60
Pigs	...	...	...	...	111

The following seizures were made during the year:—

Description.	Cause of Seizure.
4 Quarters	C. Bovis
2 Lungs	Abscess
2 Spleens	Abscess
169 lb. liver	Abscess
10 lb. liver	Angioma
160 lb. liver	Flukes

No disease was found in sheep or goats.

Food inspection.—A series of inspections of retail provision stores in the Colony resulted in the seizure and destruction of large quantities of foodstuffs of every description. It is the custom of certain of the less reputable firms to export such articles for sale in the Protectorate when no longer saleable in the Colony. The following table shows the description of the foodstuffs seized:—

Butter	26 tins	Salmon	41 tins
Margarine	23 tins	Sardines	437 tins
Cheese	118 lb.	Tinnapa	207 tins
Biscuits	148 packets	Tomatoes	628 tins
Milk	41 tins	Baked beans	12 tins
Flour	9 packets	Brussel sprouts ...	28 tins
Currants	2 tins	Irish potatoes	14 cwt.
Cocoa	245 tins	Turnips	1 tin
Corned beef	19 tins	Rice (native)	25 bags
Bacon	67 tins	Symington's packet soups	11 tins
Ham	34 tins	Cigarettes	8 tins
Cray fish	9 cases	Fruits	20 tins
Anchovies	1 tin	Beer ...	95 quarts, 68 pints
Fishfod	3 tins	Tins without labels ...	37 tins

Bakeries, etc.—The following inspections were made and action taken to remedy defects where necessary: Markets 94; bakeries 864; tanneries 301; other offensive trades 960.

B—MEASURES TAKEN TO SPREAD THE KNOWLEDGE OF HYGIENE AND SANITATION.

The teaching of hygiene is compulsory in all assisted primary and secondary schools in the Colony and Protectorate and, as outlined in the report for 1931, the grants-in-aid are conditional upon the school buildings and surroundings reaching a satisfactory standard as regards hygiene and sanitation.

Health Week was held in Freetown from 27th November to 3rd December. The following programme was arranged:—

(1) Sunday, 27th November was observed as Health Sunday and reference to health matters was made in most of the churches.

(2) A series of twenty-four different posters and pamphlets were distributed in large numbers, the subjects dealt with including many aspects of public health in the Tropics, viz., Malaria and Mosquito Extermination, Plague and Rat Destruction, Smallpox and Vaccination, Tuberculosis and Prevention, Personal and Domestic Hygiene, Ventilation, Diet, Exercise and the Prevention of the common infectious diseases of this country. Advice to expectant mothers and to those having the care of children was detailed in a similar manner.

(3) During Health Week, demonstrations were given to school managers and teachers to show the value of the work done by the staff of this department and the necessity for the measures imposed on the community by the Public Health Ordinance. Disinfection, and the development of insects carrying diseases pathogenic to man were the principal subjects dealt with.

(4) An Essay Competition was held in the schools of Freetown and the Colony, the five best essays from each school being submitted. Two hundred and eighty-five essays were received. The general standard of these essays was very high but there is reason to believe that this is not indicative of a corresponding degree of knowledge on the part of the competitors. Prizes to the value of £3 14*s.* 0*d.* were distributed.

(5) The Baby Competition is always the principal event of Health Week. At the preliminary judging which took place during the week, 48 babies were selected out of 196 at the Princess Christian Mission Hospital and 34 out of 178 at the Connaught Hospital and Campbell Street Clinics, for the final judging which took place at the Victoria Park on Saturday 3rd December. His Excellency the Governor and Lady Hodson attended and distributed prizes to the value of £22 15*s.* 0*d.*

C—TRAINING OF SANITARY PERSONNEL.

Owing to the outbreaks of smallpox discovered early in the year in the Protectorate and the necessity for adequate European supervision of the layout of the new labour camps and mining villages adjacent to the concessions (*see* page 43), the Chief Sanitary Superintendent was released from Freetown for these duties for the greater part of the year. Consequently, the usual lectures and demonstrations to the Sanitary Inspectors and Learners were not given. All of these men have received their full course of training, and the practical experience gained during the epidemic of smallpox in Freetown more than counterbalanced the loss of a repetition course in theoretical knowledge.

Two examinations were held. Sanitary Inspector Corkson was promoted to the Second Grade and five Sanitary Learners passed the examination for promotion to the fifth Grade. The latter promotions were postponed owing to the financial position.

D—RECOMMENDATIONS FOR FUTURE WORK.

In the absence of adequate funds, directly due to the financial depression through which the whole world is passing, it is impossible to envisage the carrying out of any important sanitary works. Thus, the necessary markets, slaughterhouses and pipe-borne, though not portable, water supplies which might be of value in the Protectorate, the construction of a better refuse disposal jetty at Allen Town, the improvement of the present railway refuse trucks or their substitution by proper dumping trucks must await better times.

In the meantime, it is hoped in 1933 to commence a modified system of school sanitary and school medical inspection in so far as can be done by the Medical Officer of Health, Freetown, and medical officers at outstations, without interfering with their normal routine work.

V—Port Health Work and Administration.

At Freetown, the principal port of call, 568 ships arrived during the year; 276 from the North, 249 from the South, 40 from Sherbro, 2 from Sulima and 1 from Mano Salija. The Medical Officer of Health, who is Port Health Officer, has the use of a Government launch and boards all ships on arrival between 6 a.m. and 6.p.m., accompanied by African Sanitary Inspectors. Krooboys are carefully examined on board and undergo vaccination, if necessary, on being put ashore. Sick persons on board are examined for signs of infectious disease; all passengers from infected ports are placed under surveillance and their luggage passed through the Wharf Disinfector. During the year, 10,028 Krooboys were examined. Cabin passengers disembarking at Freetown numbered 1,311 and deck passengers, 1,293.

During the period when Freetown was in quarantine for smallpox, 6,224 emigrant Krooboys and 215 intending deck passengers were passed through the Wharf Disinfecting Station, which is equipped with a high pressure steam disinfector of Washington-Lyon type, bathrooms and dressing rooms for both sexes, and accommodation for medical inspection and vaccination. Further details of preventive measures adopted against plague and smallpox at the port of Freetown are outlined in the sections dealing with those diseases.

At Bonthe (Sherbro) the District Medical Officer performs the duties of Medical Officer of Health and Port Health Officer. No medical officer is stationed at the minor ports of Sulima and Mano Salija, but ships do not call at these ports without having first called at Freetown or Bonthe.

VI—Maternity and Child Welfare.

This work was well maintained in the Connaught Hospital and Campbell Street Centres, but suffered at the Princess Christian Mission Hospital owing to the part-time absence of a Lady Medical Officer. The following table indicates briefly the progress made and includes attendances from neighbouring Colony villages.

	Connaught Hospital and Campbell Street Centres.		Princess Christian Mission Hospital.	
	1931.	1932.	1931.	1932.
Ante-natal attendances	2,829	3,009	1,683	1,435
Labour cases admitted	251	240	90	71
Health visits	3,798	3,650	4,457	3,430
Infant Welfare Clinic attendances ...	7,833	9,723	10,779	9,096

The Connaught Hospital and Campbell Street Centres are under Government control and cater for the Central and West Wards of Freetown. Miss Metzger, having obtained her training in midwifery and welfare work in England and the Certificate of the Central Midwives Board, returned to the Colony and took up the duties of her appointment as Senior Health Visitor in the Central Ward on 19th April, 1932. Miss Macfoy, a locally trained nurse and midwife, is Health Visitor for the West Ward. The School Nurse, whose appointment is interchangeable with that of Health Visitor, assisted at the Connaught Hospital and Campbell Street Centres pending the resumption of school medical inspection. She is also available to act as relief during the absence of the Health Visitors on vacation leave.

The Princess Christian Mission Hospital serves the East Ward. Miss Macauley, the Health Visitor for this Ward, received her training in England and holds the Certificate of the Central Midwives Board.

Soon after registration, the Registrar of Births and Deaths furnishes each Health Visitor with the addresses at which births have taken place in her district and the Health Visitor takes the opportunity thus offered of tracing and visiting the mother and child and giving advice to the mother and attendant about feeding, clothing, bathing and caring for the baby. The Senior Health Visitor reports that " frequently the umbilicus has to be dressed as an object lesson for the mother to see and follow."

The Births and Deaths Registration Ordinance requires that births shall be registered within fourteen days of the date of birth, but it is during this early period of life that the mortality is highest (*see* Table C on page 20), and it is desirable that an Ordinance containing provisions similar to the Notification of Births Act in England be enacted at an early date to enable the Health Visitors to make earlier contact with their cases and thus help to reduce the high infant mortality now obtaining. Meantime their work is becoming better known amongst the people and, probably as a result of their teaching in the district, the number of attendances at the Infant Welfare Clinics have shown an increase in the earlier age groups (*see* Appendix C).

Midwives are trained at the Connaught Hospital Maternity section and at the Princess Christian Mission Hospital. An examination is conducted annually with a high standard required for a pass, which entitles successful candidates to registration as midwives. Legislation has recently been enacted to place the practice of midwifery somewhat on a parallel with the conditions existing in Great Britain.

Table K on page 24 shows the causes of maternal deaths associated with pregnancy and child-bearing in 1932.

The population of the Colony, apart from Freetown, is for the most part rural, many of the villages are within easy reach of Freetown by train or 'bus and the remainder are too far apart or not large enough to justify the appointment of health visitors or the opening of infant welfare clinics. During the decennial period 1921–1931, the population showed an increase of but 43 persons, whereas the population of Freetown during the same period increased by 11,335 persons, and the greater part of this increase was shown by the Census Officer to be due to immigration of natives from the Protectorate, who form the majority of the inhabitants of Freetown and the Colony and come within the scope of the Welfare Centres—*see* Table II on page 16. Indeed it is with this section that the Health Visitors find most difficulty in recording progress. The Senior Health Visitor reports that " the mortality is highest amongst the country people who rely very much on the treatment of their native doctors," chiefly owing to their illiteracy and lack of education.

In the Protectorate the population is typically rural and scattered, and the people have not yet advanced so far as to make the establishment of Welfare Centres either justifiable or a practical proposition, but facilities are provided at the general hospitals and mission centres for those who wish to avail themselves, and midwives will be encouraged to take up practice in the larger towns and thus afford an extension of the service already provided in the Colony.

A. B. MONKS,
Acting Assistant Director of Health Service.

VII—Hospitals, Dispensaries and Clinics.

(*a*) Connaught Hospital.

Since its inception, the new childrens' ward, opened in 1931 and consisting of ten beds and one cubicle, has seldom been empty, and has served a useful purpose in providing for the institutional treatment of skeletal deformity.

Notwithstanding the health conditions generally throughout the Colony, it is gratifying to record the usefulness of the Connaught Hospital in that there was an increase in both the number of in-patients and out-patients treated, the former totalling 2,628 and the latter 12,019. These, of course, are new cases.

The Surgical Specialist was resident throughout the whole of the year and his wards were never empty; nor indeed were those of the medical side, and it is perfectly evident that when the finances of the Colony can afford it the addition of a new ward block will be greatly appreciated.

At the maternity section of the Connaught Hospital the number of in-patients treated shows a steady increase, the slight drop in the number of maternity patients admitted can be accounted for by the absence on leave of Dr. Wright who has been Officer-in-charge of this section from the date of its institution. The special reports of the Surgical Specialist and the Medical Officer-in-charge of Infant Welfare and Maternity will be found in Appendices A and B.

The following table gives the statistics in tabular form:—

Year.	Total In-patients.	Maternity In-patients.	Remarks.
1921	737	142	New hospital opened—four wards in January including maternity ward of eleven beds. Two more wards in August.
1922	1,282	169	
1923	1,557	200	
1924	1,862	263	
1925	1,860	214	
1926	1,867	251	
1927	2,046	301	
1928	1,945	311	
1929	2,228	353	
1930	2,383	363	New surgical block—two wards of fourteen beds and four cubicles.
1931	2,335	357	New children's ward—ten beds and cubicle.
1932	2,628	344	

Out-patients at the Connaught Hospital during the past ten years:—

——	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.
New Cases ...	11,335	10,955	14,106	13,834	14,780	13,864	14,265	14,276	10,583	12,019
Subsequent attendances	36,985	38,475	22,335	32,176	34,780	47,040	59,441	41,722	50,059	55,198
Total ...	48,320	49,430	36,441	46,010	49,560	60,904	73,706	55,998	60,642	67,217

(*b*) European Hospital.

During the year under review, 92 cases were admitted to the Nursing Home—a number which is similar to that admitted in 1931. Of this number officials totalled 37, the mercantile, shipping and naval community 49, and wives of Government officials and others 6. There were no deaths in the European Nursing Home.

(*c*) Other Hospitals.

There are two permanent Protectorate type hospitals, namely at Makeni and Bo in the Northern and Southern Provinces, respectively. The figures of attendances are as follows:—

Makeni:		
	In-patients	271
	Out-patients	1,936
	Subsequent attendances	21,817
Bo:		
	In-patients	249
	Out-patients	2,073
	Subsequent attendances	17,708

During the presence of Dr. A. M. Wilson Rae at Bo the nucleus of a very flourishing surgical clinic was established, people coming from great distances to obtain surgical aid; elephantiasis scroti and hernia were the chief complaints. A waiting list is in being, and it was found necessary to erect a temporary out-structure as a convalescent room for patients subsequent to operation, so that new-comers desiring treatment could be handled.

(*d*) Mission Hospitals subsidized by Government.

The Government subsidizes four mission hospitals in the Protectorate, and in the Colony gives a substantial grant-in-aid to the Princess Christian Mission Hospital which does good work mainly in the line of maternity and child welfare in Freetown.

In the Protectorate the American Wesleyan Mission is now firmly entrenched at Kamakwee, while the Wesleyan Methodist Mission now has its permanent hospital buildings at Segbwema. The American Mission of the United Brethren in Christ employed two doctors and on these grounds were given two separate subsidies. They have established themselves at Jaiama in the Kono District, and Taiama in the Moyamba District, at which centre a woman medical officer is engaged. All of these mission hospitals are doing good medical work of a pioneer type, and in any case are bringing to the people of the Protectorate that skilled treatment which Government in the present financial state of the Colony could not afford to give by the employment of its own additional medical officers. The figures of attendances at these mission hospitals are given below.

1932.	Jaiama.	Segbwema.	Kamakwee.
In-patients	82	369	18
Out-patients	3,666	6,012	3,020
Subsequent attendances ...	5,607	10,536	5,560

VIII—Meteorology.

The rainfall for the year at Freetown (Tower Hill)—132·22 inches—was lower than the rainfall for 1931, which was 147·28 inches; and below the forty years average for the period 1882–1921, which was 152·47 inches. July was the month of heaviest rain, with 31·99 inches. The highest rainfall recorded in any one day was 5·95 inches on 8th July. The lowest temperature recorded at the Tower Hill Observatory was 67 degrees on 8th and 9th January; the highest 91 degrees on 21st and 22nd January, 29th March and 10th May.

Hill Station, the residential area, situated on a ridge immediately to the west of Freetown, always has a rainfall heavier than Tower Hill. The total for the year was 157·35 inches, July with 39·59 inches being the month of heaviest rainfall. The maximum precipitation in one day was 7·74 inches on the 12th June.

The table in Appendix "A" gives statistical data in respect of the municipal area of Freetown which in its climatic aspects is somewhat different from Hill Station residential area.

IX—Scientific.

CONNAUGHT HOSPITAL LABORATORY REPORT.

Dr. C. B. Jennings was in charge of the Laboratory until May, when Dr. E. A. Renner took over. Owing to the shortage of medical officers, both medical officers did only part-time work there, and beg to acknowledge the ready help given by Professor Gordon of the Sir Alfred Jones Research Laboratory.

(1) *Blood Examination in Europeans.*

Total examinations	143
Subtertian parasites	30
Percentage positive	20·9
Quartan parasites	17
Percentage positive	11·8
Benign tertian parasites	—
Microfilariæ	—

Crescents were found in 2 cases.

(2) *Blood Examination in Africans.*

Total examinations	2,129
Subtertian parasites	184
Percentage positive	8·6
Quartan parasites	99
Percentage positive	4·6
Benign tertian parasites	—
Microfilariæ	5

Crescents were found in 8 cases. Microfilariæ, bancrofti and perstans in 3 and 2 cases respectively.

(3) *Examination of Fæces—Europeans.*

Total examinations	44
Ankylostome ova	—
Ascaris ova	—
Trichiuris ova	1
E. histolytica	1

(4) *Examination of Fæces—Africans.*

Total examinations	1,880
Ankylostome ova	423
Ascaris ova	227
Tænia saginata ova	15
Trichiuris ova	82
E. histolica	37
E. coli	4
Balantidum coli	1
Dicrocoelium deldriticum	1
Strongyloids larvæ	133

E. Histolica cysts were found on 9 occasions and E. Coli on 3.

(5) *Sputum Examination—Europeans.*

Total examinations	7
Tubercle bacilli	1

(6) *Sputum Examination—Africans.*

Total examinations	236
Tubercle bacilli	46
Percentage positive	19·4

(7) *Smears from V.D.C.—Europeans.*

Total examinations	27
Gonococci	10
Sp. pollida	—

(8) *Smears from V.D.C.—Africans.*

Total examinations	278
Gonococci	108
Sp. pollida	2

(9) *Urine Examinations—Europeans.*

Total examinations	110
Albumen	29
Sugar	1
Casts	1
Blood	4
Pus	18
Bile	2

(10) *Urine Examinations—Africans.*

Total Examinations	1,623
Sugar	14
Albumen	713
Casts	17
Blood	26
Pus	79
Bile	7
Schistosoma ova	8
Acetone	2
Diacetic acid	1

(11) *Blood Counts—Europeans.*

Total red cell counts	2
Total white cell counts	2
Differential	15

(12) *Blood Counts—Africans.*

Total red cell counts	30
Total white cell counts	24
Differential	45

(13) *Agglutination Tests.*

27 tests were made upon Africans and the results were as follows:—

Positive to B. typhosus	3
Positive to B. paratyphosus A.	2
Positive to B. paratyphosus B.	3

(14) *Leprosy—Africans.*

121 smears, nasal and skin tissues were examined with

20 positive	nasal	9
	skin	11

(15) *Kahn Tests.*

Total examinations	35
Positive	26

(16) 1,345 smears from rats were examined and no evidence of plague infection was found.

(17) *Post-mortem Examinations.*

Cardiac failure	2
Epidemic dropsy	4
Cerebral hæmorrhage	1
Uræmia	1
Peritonitis	2
Carcinoma of large intestines	1
Injuries	21
Pulmonary infection	1
Pulmonary tuberculosis	4
Endocarditis	1
Pneumococcal meningitis	3
Nephritis	4
Hypostatic pneumonia	1
Gastro enteritis	7
Electric shock	1
Miliary tuberculosis	3
Asphyxia–drowning	4
Asphyxia–hanging suicidal	1
Lobar pneumonia	2
Broncho–pneumonia	1
Epilepsy	—
Intestinal obstruction	—

E. A. RENNER,
Medical Officer-in-charge, Laboratory.

Tables.

STAFF.

I—Medical Staff.

Office.	Name.	Absent on Leave. From			Absent on Leave. To			Remarks.
Director of Medical and Sanitary Services ...	J. C. S. McDouall, O.B.E.		—			—		
Surgical Specialist ...	Q. Stewart ...		—			—		
Senior Medical Officer	G. H. Gallagher ...	19	5	32	25	11	32	
,, ...	B. W. F. Wood ...		—			—		Transferred to Nigeria.
,, ...	E. S. Walls		—		4	3	32	
Medical Officer ...	A. W. Lewis ...	24	3	32	19	8	32	
,, ...	A. M. Wilson-Rae ...	16	6	32	11	11	32	
,, ...	C. B. Jennings ...	19	5	32	9	12	32	
,, ...	W. Allan	29	12	32		—		
,, ...	R. B. Henderson ...		—			—		
,, ...	H. R. F. Tweedy ...		—			—		
,, ...	H. Peaston ...		—		5	2	32	
,, ...	A. Cathcart ...		—		13	5	32	
,, ...	T. H. Dalrymple ...	8	9	32		—		
,, ...	W. A. Burnett ...	14	12	32		—		
,, ...	A. J. Johnson ...		—			—		Appointed M.O.W.A.M.S 13-7-32.
African Medical Officer	E. J. Wright ...	30	6	32	25	11	32	
,, ...	M. C. F. Easmon ...	24	3	32	16	9	32	
,, ...	E. H. T. Cummings		—			—		
,, ...	G. N. Metzger ...	19	2	32		—		Died 28-3-32.
,, ...	E. A. Renner ...		—		5	2	32	
,, ...	W. B. Hughes ...	20	4	32	19	7	32	
,, ...	W. F. O. Taylor ...	14	12	32		—		
,, ...	M. A. S. Margai ...		—			—		

Health Staff.

Assistant Director of Health Service ...	J. A. A. Duncan, M.C.		—		27	5	32	
Senior Health Officer	A. B. Monks ...	16	6	32	28	10	32	
Medical Officer of Health	R. F. Campbell ...		—			—		Died 1-3-32.
Chief Sanitary Superintendent	G. V. Herd ...	14	12	32		—		
Superintendent Sanitary Inspector ...	A. E. Wilkinson ...		—		19	2	32	
,, ...	P. Osment ...	2	6	32	30	9	32	

Nursing Staff.

Senior Nursing Sister	Miss A. E. MacMaster		—			—		
,, ...	Miss I. A. Marr ...		—			—		
Nursing Sister ...	Miss C. H. B. Goodwin	7	4	32	2	9	32	
,, ...	Miss M. A. Henry ...	10	3	32	8	7	32	Transferred to Nigeria.
,, ...	Miss L. D. S. McPetrie	13	7	32	25	11	32	
,, ...	Miss N. M. Brown ...	14	12	32		—		
,, ...	Miss M. G. Morgan		—			—		Appointed N.S.W.A.N.S. 6-4-32.
,, ...	Miss H. W. F. Young		—			—		Appointed N.S.W.A.N.S. 33-11-32.

African Medical Subordinate Staff.

Office.	Name.	Absent on Leave. From			To			Remarks.
Chief Dispenser ...	I. H. Wright ...	7	7	32	6	10	32	
Assistant Chief Dispenser	M. O. Frazer ...		—			—		
Hospital Warden ...	P. Q. A. John ...		—			—		
First Class Dispenser	O. V. E. Nylander ...	21	5	32	30	6	32	
,, ,,	H. E. Frazer ...	3	5	32	2	7	32	
,, ,,	P. J. John ...		—			—		
,, ,,	M. P. Neville ...		—			—		
,, ,,	I. B. Doherty ...		—			—		
,, ,,	T. M. T. Scott ...		—			—		
,, ,,	J. C. May ...	15	6	32	14	8	32	
,, ,,	S. B. Williams ...	26	10	32	25	12	32	
,, ,,	E. W. Cole ...		—			—		
,, ,,	G. C. Heroe ...	9	12	32		—		
Second Class Dispensers	Ten		—			—		
Third Class Dispensers	Fourteen		—			—		
Laboratory Assistant ...	C. H. Greene ...		—			—		
Male Nurses and Apprentices ...	Thirty-two		—			—		
Female Nurses and Probationers ...	Twenty-five		—			—		
Midwives	Two		—			—		
School Nurse ...	One		—			—		

African Health Subordinate Staff.

Senior Health Visitor	Miss O. T. Metzger		—			—		
Health Visitor ..	Mrs. V. Shaw-Macfoy		—			—		
,, ,, ...	Miss A. Macauley and one other		—			—		
Second Grade Sanitary Inspector ...	W. E. J. Corkson ...	1	8	32	31	10	32	
Fourth Grade Sanitary Inspectors ...	Six		—			—		
Fifth Grade Sanitary Inspectors and Learners	Thirty-one		—			—		

Medical and Sanitary Clerical Staff.

Chief Clerk ...	S. G. Randall ...		—			—		
Second Grade Clerk ...	C. B. K. M'Carthy...		—			—		
Senior Third Grade Clerks	Nine		—			—		
Junior Third Grade Clerks	Six		—			—		

Medical Store-keeping Staff.

Chief Store-keeper ...	K. A. King ...	17	10	32	16	12	32	
Assistant Store-keeper	E. J. Beale ...	2	8	32	1	9	32	
,, ,,	D. G. Kawaley ...		—			—		

II—FINANCE.

1932 Estimates—Expenditure.

Medical.

Personal Emoluments:	£
European	16,960
African	20,472
Allowances	1,414
Total	£38,846

Other Charges:	£
Medical supplies and hospital equipment	3,830
Diets, provisions, etc.	4,000
Contributions to various associations and subsidies to institutions	2,760
Passages, transport, freight, etc.	2,500
Other items	775
Total	£13,865

Health.

Personal Emoluments:	£
European	5,462
African	5,113
Labour	8,500
Total	£19,075

Other Charges:	£
Refuse disposal	700
Preventive measures	1,125
Transport	1,591
Other items	205
Total	£3,621

Receipts.	£
African hospital fees	214
European hospital fees	489
Lunatic hospital fees	151
Sale of medicines	744
Total	£1,598

III—RETURN OF DISEASES AND DEATHS—EUROPEAN.

Diseases.	IN-PATIENTS.					Out-patients.
	Remaining in Hospital at end of 1931.	Total Admission.	Total Cases treated.	Deaths.	Remaining in Hospital at end of 1932.	
I—Epidemic, Endemic, and Infectious Diseases.						
5. Malaria :						
(*a*) Tertian	...	...	...	...	...	2
(*b*) Quartan	...	10	10	...	...	...
(*c*) Aestivo-autumnal	...	23	23	...	2	30
(*d*) Cachexia	1	2	3	...	...	2
(*e*) Unclassified	...	1	1	...	...	31
(*f*) Blackwater	...	1	1	...	...	...
11. Influenza	...	...	...	...	..	4
16. Dysentery :						
(*a*) Amœbic	...	...	...	...	...	3
31. Tuberculosis, pulmonary and laryngeal	...	1	1	...	1	...
40. A.—Gonorrhœa and its complications	...	1	1	...	...	1
II—General Diseases not mentioned above.						
49. Cancer or other malignant tumours of organs not specified ...	...	1	1	...	...	...
51. Acute rheumatism	...	...	...	...	...	20
52. Chronic rheumatism	...	...	...	...	...	2
58. Anæmia :						
(*b*) Other anæmias and chlorosis ...		2	2	...	...	44
66. Alcoholism	...	1	1	...	...	...
69. Other general diseases ...	...	...	...	...	...	6
III—Affections of the Nervous System and Organs of the Senses.						
74. Apoplexy :						
(*a*) Hæmorrhage cerebral ...	...	1	1	1	...	...
75. Paralysis :						
(*a*) Hemiplegia		1	1	...	...	...
82. A.—Hysteria	...	...	...	...	...	1
B.—Neuritis	...	...	...	...	...	4
C.—Neurasthenia	...	2	2	...	...	...
Carried forward ...	1	47	48	1	3	150

The form shows in the main the arrangement of diseases in the International Nomenclature, 1921 Edition. To save space the unimportant diseases of any class can be grouped in their places as " Other Diseases " of the class

EUROPEAN—*continued.*

Diseases.	IN-PATIENTS. Remaining in Hospital at end of 1931.	Total Admission.	Total Cases treated.	Deaths.	Remaining in Hospita at end of 1932.	Out-patients.
Brought forward ...	1	47	48	1	3	150
III—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES—*continued.*						
84. Other affections of the nervous system, such as paralysis agitans	...	...	...	...	...	84
85. Affections of the Organs of Vision :						
(*b*) Conjunctivitis	...	...	...	...	...	23
(*e*) Other affections of the eye ...	1	...	1	...	...	1
86. Affections of the ear or mastoid sinus	...	...	...	...	...	25
IV—AFFECTIONS OF THE CIRCULATORY SYSTEM.						
90. Other Diseases of the Heart :						
(*b*) Myocarditis	...	1	1	...	...	2
93. Diseases of the Veins :						
Hæmorrhoids	...	1	1	...	...	1
Phlebitis	...	1	1	...	...	1
94 Diseases of the Lymphatic System :						
Lymphangitis	1	...	1	...	...	2
V—AFFECTIONS OF THE RESPIRATORY SYSTEM.						
97. Diseases of the Nasal Passages :						
Rhinitis	...	...	...	...	...	1
Coryza	...	...	...	...	...	9
Other diseases of the nasal passages	...	...	...	...	...	1
98. Affections of the Larynx :						
Laryngitis	...	...	...	...	...	1
99. Bronchitis :						
(*a*) Acute	...	1	1	...	...	60
101. Pneumonia :						
(*a*) Lobar	...	2	2	...	...	...
106. Pulmonary emphysema ...	...	1	1	...	...	...
107. Other affections of the lungs	...	...	...	...	...	4
Carried forward ...	3	54	57	1	3	365

EUROPEAN—*continued.*

Diseases.	IN-PATIENTS.					Out-patients.
	Remaining in Hospital at end of 1931.	Total Admission.	Total Cases treated.	Deaths.	Remaining in Hospital at end of 1932.	
Brought forward ...	3	54	57	1	3	365
VI—DISEASES OF THE DIGESTIVE SYSTEM.						
108. A.—Diseases of the Teeth or Gums :						
Caries, pyorrhœa, etc.	...	...	...	...	...	4
109. Affections of the Pharynx or Tonsils :						
Tonsillitis	...	...	...	...	...	24
Pharyngitis	...	...	...	...	...	5
112. Other Affections of the Stomach :						
Gastritis	...	..	...	...	...	4
Dyspepsia, etc.	...	...	...	...	...	65
114. Diarrhœa and Enteritis :						
Two years and over	...	2	2	...	...	22
Colitis	...	1	1	...	...	...
115. Ankylostomiasis	...					1
116. Diseases due to Intestinal Parasites :						
(*a*) Cestoda (tænia)	...	...	...	...	...	1
(*b*) Trematoda (flukes)	...	...	...	...	...	1
Ascaris	...	...	...	...	...	3
117. Appendicitis	...	4	4	...	...	...
119. B.—Other Affections of the Intestines :						
Constipation	...	...	...	...	...	48
122. Cirrhosis of the liver ...	..	1	1	...	...	...
124. Other Affections of the Liver :						
Jaundice	...	1	1	...	...	2
VII—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL).						
129. Chronic	...	1	1	...	...	...
131. Other affections of the kidneys	...	...	...	...	...	1
Pyelitis, etc.	...	3	3	...	...	...
133. Diseases of the Bladder :						
Cystitis	...	...	...	...	...	15
134 Diseases of the Urethra :						
(*b*) Other	...	...	...	...	...	12
Carried forward ...	3	67	70	1	3	573

EUROPEAN—*continued.*

Diseases.	IN-PATIENTS. Remaining in Hospital at end of 1931.	Total Admission.	Total Cases treated.	Deaths.	Remaining in Hospital at end of 1932.	Out-patients.
Brought forward ...	3	67	70	1	3	573
VII—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL), *continued.*						
135. Diseases of the Prostate :						
Prostatitis	...	...	...	...	...	1
136. Diseases (non-venereal) of the Genital Organs of Man :						
Orchitis	...	2	2	...	...	1
Other diseases of the male genital organs	...	...	...	...	...	1
141. A.—Metritis	...	...	...	...	...	2
VIII—PUERPERAL STATE.						
143. B.—Accidents of Pregnancy :						
(*a*) Abortion	...	1	1	...	...	...
(*c*) Other accidents of pregnancy (miscarriage)	...	1	1	...	...	...
IX—AFFECTIONS OF THE SKIN AND CELLULAR TISSUES.						
152. Boil	...	2	2	...	...	23
Carbuncle	...	2	2	...	...	...
153. Abscess	...	...	...	...	...	1
Cellulitis	...	1	1	...	...	6
154. A.—Tinea	...	1	1	...	...	4
B.—Scabies	...	...	...	...	...	1
155. Other diseases of the skin ...	...	1	1	...	...	15
(*a*) Erythema	...	1	1	...	...	...
(*b*) Urticaria	...	...	...	...	...	1
(*c*) Eczema	...	...	...	...	...	5
(*d*) Herpes	...	...	...	...	...	1
(*j*) Ulcer	...	3	3	...	...	72
X—DISEASES OF BONES AND ORGANS OF LOCOMOTION (OTHER THAN TUBERCULOUS).						
157. Diseases of Joints :						
Arthritis	...	2	2	...	...	...
158. Other diseases of bones or organs of locomotion	...	3	3	...	...	3
Carried forward ...	3	87	90	1	3	710

EUROPEAN—*continued.*

Diseases.	IN-PATIENTS.					Out-patients.
	Remaining in Hospital at end of 1931.	Total Admission.	Total Cases treated.	Deaths.	Remaining in Hospital at end of 1932.	
Brought forward ...	3	87	90	1	3	710
XIV—AFFECTIONS PRODUCED BY EXTERNAL CAUSES.						
176. Attacks of Poisonous Animals :						
Insect bite	...	...	...	...	...	4
178. Burns (by fire)	...	...	...	...	...	1
184. Wounds (by cutting or stabbing instruments)	1	...	1	...	...	13
189. Injuries inflicted by animals, bites, kicks, etc.	...	...	...	...	...	1
201. B.—Sprain	...	1	1	...	...	3
C.—Fracture	1	2	3	...	...	...
202. Other external injuries ...	...	1	1	...	...	18
XV—ILL-DEFINED DISEASES.						
205. A.—Diseases not already specified or Ill-defined :						
Asthenia	...	...	...	...	...	46
No appreciable disease	...	1	1	...	...	...
Total	5	92	97	1	3	796

IV—RETURN OF DISEASES AND DEATHS—AFRICAN.

Diseases.	IN-PATIENTS. Remaining in Hospital at end of 1931.	Total Admission.	Total Cases treated.	Deaths.	Remaining in Hospital at end of 1932.	Out-patients.
I—Epidemic, Endemic and Infectious Diseases.						
1. Enteric Group :						
(*a*) Typhoid fever	...	9	9	3	...	...
(*b*) Paratyphoid A.	...	3	3	...	...	1
(*d*) Type not defined	...	2	2	1	...	...
5. Malaria :						
(*a*) Tertian	...	15	15	...	...	49
(*b*) Quartan	...	9	9	...	1	15
(*c*) Aestivo-autumnal	...	199	199	2	1	784
(*d*) Cachexia	...	5	5	4	...	34
(*e*) Unclassified	...	101	101	...	1	3,544
(*f*) Blackwater	...	...	...	...	...	1
6. Smallpox	...	268	268	10	9	152
Alastrim	...	16	16	2	...	...
7. Measles	...	...	...	...	...	1
9. Whooping cough	...	3	3	...	...	68
11. Influenza	...	11	11	...	...	21
13. Mumps	...	6	6	...	...	82
16. Dysentery :						
(*a*) Amœbic	...	50	50	1	...	120
(*b*) Bacillary	...	2	2	1	...	2
(*c*) Undefined or due to other causes	...	25	25	4	...	128
20. Leprosy	14	5	19	2	15	223
22. Acute poliomyelitis	...	4	4	...	...	3
23. Encephalitis lethargica	...	2	2	1	...	...
25. Other Epidemic Diseases :						
(*b*) Varicella (chicken-pox) ...	...	42	42	...	1	69
(*f*) Epidemic dropsy	...	4	4	...	...	2
(*g*) Yaws	11	38	49	2	8	5,842
(*h*) Trypanosomiasis	...	1	1	1	...	...
27. Anthrax	...	...	...	...	...	1
29. Tetanus	2	10	12	6	...	4
31. Tuberculosis, pulmonary and laryngeal	2	70	72	10	2	129
32. Tuberculosis of the meninges or central nervous system ...	...	...	...	...	...	1
33. Tuberculosis of the intestines or peritoneum	...	1	1	...	1	4
34. Tuberculosis of the vertebral column	1	...	1	...	...	3
35. Tuberculosis of bones and joints ...	...	2	2	...	...	1
36. Tuberculosis of other organs ...	...	...	...	...	...	1
(*b*) Bones	...	...	...	...	...	1
(*c*) Lymphatic system	...	2	2	...	...	8
(*e*) Other organs	...	2	2	1	...	...
38. Syphilis :						
(*a*) Primary	...	3	3	...	...	27
(*b*) Secondary	...	5	5	...	1	46
(*c*) Tertiary	...	23	23	...	...	216
(*d*) Hereditary	2	5	7	...	...	19
(*e*) Period not indicated ...	...	4	4	...	...	38
Carried forward ...	32	947	979	51	40	11,640

The form shows in the main the arrangement of diseases in the International Nomenclature, 1921 Edition. To save space the unimportant diseases of any class can be grouped in their places as "Other Diseases" of the class.

AFRICAN—*continued.*

Diseases.	IN-PATIENTS. Remaining in Hospital at end of 1931.	Total Admission.	Total Cases treated.	Deaths.	Remaining in Hospital at end of 1932.	Out-patients.
Brought forward ...	32	947	979	51	40	11,640
I—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES—*continued.*						
39 Soft chancre	...	9	9	...	2	113
40 A.—Gonorrhœa and its complications	8	88	96	1	3	1,861
B.—Gonorrhœal ophthalmia ...	...	10	10	...	...	20
C.—Gonorrhœal arthritis ...	1	16	17	...	1	106
D.—Granuloma venereum ...	...	...	...	...	..	2
41. Septicæmia	...	7	7	7	...	...
42. Other infectious diseases ...	..	2	2	...	...	...
II—GENERAL DISEASES NOT MENTIONED ABOVE.						
43. Cancer or other malignant tumours of the buccal cavity	...	1	1	...	...	1
44. Cancer or other malignant tumours of stomach or liver	...	5	5	...	...	1
45. Cancer or other malignant tumours of the peritoneum, intestines, rectum	...	17	17	6	1	4
46. Cancer or other malignant tumours of the female genital organs ...	...	1	1	1	...	1
47. Cancer or other malignant tumours of the breast	1	1	2	...	...	...
49. Cancer or other malignant tumours of organs not specified ...	...	17	17	5	1	3
50. Tumours, non-malignant ...	3	56	59	1	5	146
51. Acute rheumatism	1	25	26	1	...	687
52. Chronic rheumatism	6	55	61	4	6	4,466
55. Beriberi	2	2	4	1	...	2
56. Rickets	5	...	5	...	...	15
57. Diabetes (not including insipidus)	...	2	2	1	...	5
58. Anæmia :						
(*b*) Other anæmias and chlorosis ...	...	22	22	3	...	673
Avitaminosis	6	24	30	9	4	191
59. Diseases of the pituitary body ...	...	...	...	...	...	1
60. Diseases of the Thyroid Gland :						
(*a*) Exophthalmic goitre ...	...	8	8	2	...	27
(*b*) Other diseases of the thyroid gland, myxœdema	...	1	1	...	...	15
61. Diseases of the para-thyroid glands	...	...	...	...	...	2
62. Diseases of the thymus	...	...	...	...	...	1
64. Diseases of the spleen	2	4	6	...	...	400
65. Leukæmia :						
(*b*) Hodgkin's disease	...	...	...	...	...	1
66. Alcoholism	...	1	1	...	...	1
67. Chronic poisoning by mineral substances (lead, mercury, etc.)	...	...	...	...	...	7
69. Other general diseases	...	2	2	...	...	108
Auto-intoxication	...	...	...	...	...	27
Diabetes insipidus	...	...	...	...	...	1
Carried forward ...	67	1,323	1,390	93	63	20,528

AFRICAN—*continued.*

Diseases.	IN-PATIENTS. Remaining in Hospital at end of 1931.	Total Admission.	Total Cases treated.	Deaths.	Remaining in Hospital at end of 1932.	Out-patients.
Brought forward ...	67	1,323	1,390	93	63	20,528
III—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES.						
70. Encephalitis (not including encephalitis lethargica)	...	4	4	2	...	...
71. Meningitis (not including tuberculous meningitis or cerebro-spinal meningitis)	...	5	5	3	1	2
72. Locomotor ataxia	...	8	8	3	...	12
73. Other affections of the spinal cord ...	1	...	1	...	...	...
74. Apoplexy :						
(*a*) Hæmorrhage	...	3	3	1	...	1
(*b*) Embolism	...	1	1	1	...	...
(*c*) Thrombosis	...	1	1	1	...	...
75. Paralysis :						
(*a*) Hemiplegia	5	27	32	3	8	56
(*b*) Other paralysis	7	26	33	5	11	77
77. Other forms of mental alienation	10	21	31	2	8	7
78. Epilepsy	2	5	7	3	...	24
79. Eclampsia, convulsions (non-puerperal) 5 years or over	...	1	1	1	...	...
80. Infantile convulsions	...	3	3	...	...	8
81. Chorea	...	1	1	...	...	1
82. A.—Hysteria	...	1	1	...	...	2
B.—Neuritis	...	4	4	...	...	157
C.—Neurasthenia	...	5	5	...	...	26
84. Other affections of the nervous system, such as paralysis agitans	...	14	14	...	1	170
85. Affections of the Organs of Vision :						
(*a*) Diseases of the eye ...	...	20	20	...	1	77
(*b*) Conjunctivitis	1	35	36	...	2	770
(*c*) Trachoma	...	...	...	...	...	5
(*d*) Tumours of the eye ...	...	1	1	...	...	5
(*e*) Other affections of the eye ...	3	9	12	...	5	339
86. Affections of the ear or mastoid sinus	...	12	12	1	1	823
IV—AFFECTIONS OF THE CIRCULATORY SYSTEM.						
87. Pericarditis	...	4	4	1	...	2
88. Acute endocarditis, or myocarditis	...	1	1	...	...	...
90. Other diseases of the heart ...	2	6	8	1	...	66
(*a*) Valvular	...	1	1	...	...	14
Mitral	1	16	17	3	...	113
Aortic	...	5	5	4	...	39
Tricuspid	...	...	...	...	...	1
Pulmonary	...	1	1	...	...	...
(*b*) Myocarditis	1	14	15	5	1	26
91. Diseases of the Arteries :						
(*a*) Aneurism	1	4	5	2	...	10
(*b*) Arterio-sclerosis	...	...	...	...	...	4
(*c*) Other diseases	...	1	1	...	...	1
Carried forward ...	101	1,583	1,684	135	102	23,366

AFRICAN—*continued.*

Diseases.	IN-PATIENTS. Remaining in Hospital at end of 1931.	Total Admission.	Total Cases treated.	Deaths.	Remaining in Hospital at end of 1932.	Out-patients.
Brought forward ...	101	1,583	1,684	135	102	23,366
IV—AFFECTIONS OF THE CIRCULATORY SYSTEM—*continued.*						
93. Diseases of the Veins :						
Hæmorrhoids	1	8	9	...	...	105
Varicose veins	...	1	1	...	...	7
Phlebitis	...	2	2	...	...	3
94. Diseases of the Lymphatic System :						
Lymphangitis	1	3	4	...	...	54
Lymphadenitis, bubo (non-specific)	3	62	65	. .	4	471
95. Hæmorrhage of undetermined cause	...	3	3	...	1	1
96. Other affections of the circulatory system	...	10	10	1	...	113
V—AFFECTIONS OF THE RESPIRATORY SYSTEM.						
97. Diseases of the Nasal Passages :						
Adenoids	...	3	3	...	...	11
Polypus	...	...	...	...	...	5
Rhinitis	...	2	2	..	...	39
Coryza	...	11	11	...	...	532
Other diseases of the nasal passages	...	...	...	...	...	4
98. Affections of the Larynx :						
Laryngitis	1	...	1	...	...	162
99. Bronchitis :						
(*a*) Acute	1	72	73	...	1	5,192
(*b*) Chronic	...	17	17	...	...	3,444
100. Broncho-pneumonia	3	36	39	10	...	13
101. Pneumonia :						
(*a*) Lobar	3	23	26	6	3	15
(*b*) Unclassified	3	67	70	16	1	35
102. Pleurisy, empyema	1	43	44	...	...	143
105. Asthma	..	12	12	1	...	150
106. Pulmonary emphysema	...	1	1	...	...	14
107. Other affections of the lungs ...	...	11	11	4	...	578
VI—DISEASES OF THE DIGESTIVE SYSTEM.						
108. A.—Diseases of teeth or gums	...	...	...	...	...	23
B.—Other Affections of the Mouth:						
Caries, pyorrhœa, etc. ...	...	12	12	1	...	1,384
Stomatitis	...	5	5	...	...	327
Glossitis, etc.	...	3	3	...	...	55
109. Affections of the Pharynx or Tonsils:						
Tonsillitis	1	26	27	...	...	323
Pharyngitis	...	13	13	...	...	99
110. Affections of the œsophagus ...	...	...	...	...	...	1
111. A.—Ulcer of the stomach ...	...	...	...	...	...	1
B.—Ulcer of the duodenum ...	...	3	3	2	...	...
Carried forward ...	119	2,032	2,151	176	112	36,670

AFRICAN—*continued.*

Diseases.	IN-PATIENTS.					Out-patients.
	Remaining in Hospital at end of 1931.	Total Admission.	Total Cases treated.	Deaths.	Remaining in Hospital at end of 1932.	
Brought forward ...	119	2,032	2,151	176	112	36,670
VI—DISEASES OF THE DIGESTIVE SYSTEM—*continued.*						
112. Other Affections of the Stomach:						
Gastritis	...	18	18	...	...	367
Dyspepsia, etc.	1	6	7	...	1	3,531
113. Diarrhœa and Enteritis:						
Under two years	...	5	5	...	...	124
114. Diarrhœa and Enteritis:						
Two years and over... ...	...	65	65	5	2	690
Colitis	...	4	4	...	...	28
115. Ankylostomiasis	...	32	32	...	2	152
116. Diseases due to Intestinal Parasites:						
(*a*) Cestoda (tænia)	...	7	7	...	...	256
(*b*) Trematoda (flukes) ...	..	...	...	...	...	1
(*c*) Nematoda (other than ankylostoma)...	...	...	...	...	...	6
Ascaris	...	18	18	1	1	3,826
Trichocephalus dispar ...	...	...	...	...	...	1
Trichina	...	...	...	...	...	8
Strongylus	...	...	...	...	...	20
(*e*) Other parasites	...	2	2	...	...	1
(*f*) Unclassified	...	...	...	...	...	3
117. Appendicitis	...	5	5	...	1	3
118. Hernia	20	404	424	10	19	265
119. A.—Affections of the anus, fistula, etc.	3	19	22	1	...	17
B.—Other affections of the intestines	...	2	2	1	...	19
Constipation	...	25	25	...	...	8,178
122. Cirrhosis of the Liver:						
(*a*) Alcoholic	...	...	...	...	...	1
(*b*) Other forms	...	11	11	6	...	...
124. Other affections of the liver ...	...	...	...	...	...	2
Abscess	...	14	14	2	...	6
Hepatitis	...	9	9	...	...	67
Cholecystitis	...	2	2	...	...	2
Jaundice	...	5	5	...	...	29
125. Diseases of the pancreas ..	...	1	1	...	...	...
126. Peritonitis (of unknown cause) ...	...	4	4	1	...	2
127. Other affections of the digestive system	...	12	12	...	...	824
VII—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL).						
128. Acute nephritis	1	16	17	2	...	36
129. Chronic	...	17	17	6	...	93
130. B.—Schistosomiasis	...	21	21	...	3	38
131. Other affections of the kidneys ...	2	12	14	...	...	9
Pyelitis, etc.	...	5	5	...	...	23
132. Urinary calculus	...	1	1	...	...	...
Carried forward ...	146	2,774	2,920	211	141	55,298

AFRICAN—*continued.*

Diseases.	IN-PATIENTS. Remaining in Hospital at end of 1931.	Total Admission.	Total Cases treated.	Deaths.	Remaining in Hospital at end of 1932.	Out-patients
Brought forward ...	146	2,774	2,920	211	141	55,298
VII—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL)—*continued.*						
133. Diseases of the Bladder:						
Cystitis	...	11	11	...	1	116
134. Diseases of the Urethra:						
(*a*) Stricture	4	48	52	7	1	72
(*b*) Other	2	33	35	2	...	106
135. Diseases of the Prostate:						
Prostatitis	...	1	1	...	...	1
136. Diseases (non-venereal) of the Genital Organs of Man:						
Epididymitis	...	6	6	...	2	27
Orchitis	4	28	32	...	...	190
Hydrocele	4	120	124	3	10	163
Ulcer of penis	...	17	17	...	1	158
Other affections of the male genital organs	...	35	35	2	2	74
137. Cysts or other non-malignant tumours of the ovaries ...	...	3	3	...	2	2
138. Salpingitis	...	6	6	...	...	20
Abscess of the pelvis... ..	...	...	...	...	...	1
139. Uterine tumours (non-malignant)	...	11	11	...	1	15
140. Uterine hæmorrhage (non-puerperal)	...	...	...	...	...	5
141. A.—Metritis	...	7	7	...	...	56
B.—Other affections of the female genital organs	1	30	31	...	5	249
Displacements of uterus ...	...	3	3	...	...	18
Amenorrhœa	...	2	2	...	...	523
Dysmenorrhœa	...	2	2	...	...	256
Leucorrhœa	...	1	1	...	...	40
142. Diseases of the Breast (Non-puerperal):						
Mastitis	2	8	10	1	...	60
Abscess of breast	...	1	1	...	...	23
VIII—PUERPERAL STATE.						
143. A.—Normal labour	4	258	262	...	6	12
B.—Accidents of pregnancy ...	...	...	...	...	...	4
(*a*) Abortion	1	14	15	...	...	50
(*c*) Other accidents of pregnancy	...	83	83	3	...	71
144. Puerperal hæmorrhage ...	..	1	1	1	...	...
145. Other accidents of parturition ...	...	5	5	5	...	8
146. Puerperal septicæmia	...	3	3	1	...	1
148. Puerperal eclampsia	...	6	6	1	...	...
149. Sequelæ of labour	...	4	4	...	...	2
150. Puerperal affections of the breast	...	...	...	...	...	2
Carried forward ...	168	3,521	3,689	237	173	57,623

AFRICAN—*continued.*

Diseases.	IN-PATIENTS. Remaining in Hospital at end of 1931.	Total Admission.	Total Cases treated.	Deaths.	Remaining in Hospital at end of 1932.	Out-patients.
Brought forward ...	168	3,521	3,689	237	173	57,623
IX—AFFECTIONS OF THE SKIN AND CELLULAR TISSUES.						
151. Gangrene	...	1	1	...	...	8
152. Boil	...	10	10	...	...	355
Carbuncle	1	7	8	...	...	110
153. Abscess	5	95	100	2	8	476
Whitlow	2	10	12	...	...	317
Cellulitis	2	58	60	1	2	284
154. A.—Tinea	...	6	6	...	...	345
B.—Scabies	...	3	3	...	1	1,087
155. Other diseases of the skin ...	...	8	8	...	1	518
(*a*) Erythema	...	1	1	...	...	4
(*b*) Urticaria	...	...	...	...	...	20
(*c*) Eczema	...	4	4	1	...	212
(*d*) Herpes	...	3	3	...	...	49
(*e*) Psoriasis	...	...	...	...	...	2
(*f*) Elephantiasis	5	140	145	2	11	151
(*h*) Chigoes ...	1	2	3	...	...	16
(*i*) Cutaneous leishmaniasis ...	...	1	1	...	...	1
(*j*) Ulcer	34	372	406	9	37	8,561
X—DISEASES OF BONES AND ORGANS OF LOCOMOTION (OTHER THAN TUBERCULOUS).						
156. Diseases of Bones:						
Osteitis	...	9	9	...	...	282
157. Diseases of Joints:						
Arthritis	4	50	54	...	4	1,560
Synovitis	2	22	24	...	1	178
158. Other diseases of bones or organs of locomotion	1	66	67	...	2	2,312
XI—MALFORMATIONS.						
159. Malformations	...	6	6	...	...	2
Hydrocephalus	...	...	...	...	...	1
Spina bifida, etc.	...	1	1	1	...	...
XII—DISEASES OF INFANCY.						
160. Congenital debility	...	...	...	...	...	1
162. Other affections of infancy ...	...	5	5	1	...	4
163. Infant neglect (infants of three months or over)	...	...	...	...	...	2
XIII—AFFECTIONS OF OLD AGE.						
164. Senility	...	1	1	...	...	12
Senile dementia	...	1	1	...	...	...
XIV—AFFECTIONS PRODUCED BY EXTERNAL CAUSES.						
166. Corrosive poisoning (intentional)	...	1	1	1	...	...
171. Suicide by cutting or stabbing instruments	...	2	2	1	...	...
Carried forward ...	225	4,406	4,631	256	240	74,493

AFRICAN—*continued.*

Diseases.	IN-PATIENTS. Remaining in Hospital at end of 1931.	Total Admission.	Total Cases treated.	Deaths.	Remaining in Hospital at end of 1932.	Out-patients.
Brought forward ...	225	4,406	4,631	256	240	74,493
XIV—AFFECTIONS PRODUCED BY EXTERNAL CAUSES—*continued.*						
176. Attacks of Poisonous Animals:						
Snake bite	...	2	2	...	...	22
Insect bite	...	1	1	...	...	41
177. Other accidental poisonings ...	...	5	5	...	...	...
178. Burns (by fire)	...	21	21	3	...	137
179. Burns (other than by fire) ...	...	18	18	...	1	104
183. Wounds (by firearms, war excepted)	1	4	5	...	...	10
184. Wounds (by cutting or stabbing instruments)	2	51	53	1	2	982
185. Wounds (by fall)	1	28	29	2	1	537
187. Wounds (by machinery) ...	...	2	2	...	...	6
188. Wounds (crushing, e.g. railway accidents, etc.)	...	4	4	1	...	12
189. Injuries inflicted by animals, bites, kicks, etc.	...	14	14	...	...	162
192. B.—Hunger or thirst	...	1	1	...	...	2
193. Exposure to cold, frostbite, etc.	...	6	6	...	...	...
201. A.—Dislocation	1	10	11	...	1	17
B.—Sprain	...	16	16	...	1	432
C.—Fracture	9	71	80	8	8	76
202. Other external injuries ...	5	175	180	...	...	3.749
XV—ILL-DEFINED DISEASES.						
205. A.—Diseases not already specified or ill-defined:						
Ascites	1	19	20	3	4	25
Œdema	1	36	37	6	2	106
Asthenia	7	21	28	2	10	517
Shock	...	3	3	...	...	24
Hyper-pyrexia	...	1	1	1	...	1
B.—Malingering	...	1	1	...	...	4
Pyrexia of uncertain origin ...	...	38	38	...	2	440
No appreciable disease ...	...	55	55	...	...	331
Undiagnosed	...	1	1	...	1	1
Total ...	253	5,010	5,263	283	273	82,231

Appendixes.

A—REPORT OF THE SURGICAL SPECIALIST, CONNAUGHT HOSPITAL.

The year 1932 has been a record year for the surgical clinic, the figures being the largest since its inception. 1,913 operations were performed as against 1,410 last year.

Amongst other work 68 cases of elephantiasis were done (without a death), and 292 hernias rectified. The largest elephantiasis of the scrotum yet seen by me was operated on: it weighed 3 lb. more than the patient himself, the total weight of both being 20 stones, 3 lb.

It is now over five years since this clinic was begun, and a short review of its activities would appear to be indicated in order to see what has been accomplished and whether it has justified its existence.

While a definite " five-year plan " was not contemplated, a policy of steady expansion has been pursued. A new surgical block has arisen during the period and modern instruments and appliances brought into use.

That expenses connected with the running of this unit have been cut as closely as is consistent with efficiency is, I think, brought out by the following facts:

Despite the large number of beds only one qualified man, the Surgical Specialist, is engaged in running them, one dispenser and one dresser being trained and used as anæsthetist and assistant respectively, and the staff in the wards reduced to the bare minimum.

The stay of each patient in hospital is curtailed as far as may be possible. Drugs are employed no more than is absolutely necessary.

In operative work thread and silk have taken the place to a large extent of the expensive catgut. Spinal anæsthesia costing the sum of 5*d.* per patient is the principal anæsthetic in use as against chloroform at an average cost of 3*s.* per patient.

The use of dressings is reduced considerably by using collodion on gauze for the dressing of most dry operation wounds, while considerable success has followed in the wards the modern conception of the infrequent dressing of certain types of septic wounds by enclosing them in a plaster case after packing with sterile vaselined gauze, and leaving them entirely alone for anything up to six weeks, thus relieving the patient and reducing working costs very appreciably.

60 of the Connaught Hospital's 120 beds are allotted for surgical in-patients. Minor operations not requiring admission are carried out in the out-patient theatre by the various medical officers attached to the hospital.

The Surgical Specialist in charge of such a clinic as this has to be a " jack of all trades: " he cannot confine himself like even the general surgeon in England but must include in his practice any and every kind of surgical ailment not omitting eyes and ear, nose and throat. It is impossible, of course, for him to be an expert in all these branches, but he must be prepared to tackle anything that comes along; needless to say, with routine operations on five or even six days a week this involves considerable strain at times.

The total number of operations performed during the period under review was 6,615; of these 1,067 were hernias and 222 elephantiasis, while 4,219 anæsthetics were given.

A large percentage of the more or less disabled patients included in these figures has been restored to full or partial earning capacity, a factor of some economic importance to the community.

Records of all in-patients are kept as completely as possible in the absence of clerical assistance.

There has been an increasing number of the more advanced and serious type of case seen, and motor accidents are now responsible for many more cases than formerly. Freetown tends to become a surgical port of call, patients being landed off ships from time to time requiring treatment for emergencies. Natives of neighbouring countries, especially Liberia, are also seen on occasion coming for treatment.

It has been found possible on one or two occasions, despite the shortage of medical staff, to attach medical officers as house surgeons, and that this has been beneficial in stimulating an interest in surgery is evidenced from His Excellency the Governor's mention in his annual address of Dr. Margai.

Patients now come freely to this clinic from all parts of the Protectorate, some of them trekking hundreds of miles; many are sent, however, by medical officers who are able to furnish a free rail warrant if necessary. Such a clinic as this must be, I think, a political force of some significance in that it brings home to the Protectorate native certain of the benefits of the present administration.

Q. STEWART,
Surgical Specialist.

OPERATIONS AT THE CONNAUGHT HOSPITAL IN 1932.

	Cured.	Relieved.	Unrelieved.	Died
(1) Abdominal:				
Herniotomy—epigastric	1	—	—	—
Herniotomy—inguinal	275	—	—	1
Herniotomy—femoral	5	—	—	—
Herniotomy–strangulated inguinal ...	10	—	—	—
Gastro-enterostomy	2	—	—	1
Closure of fæcal fistula	—	—	—	1
Enterectomy	3	—	—	1
Appendicostomy	1	—	—	—
Appendicectomy	3	—	—	—
Colostomy	—	1	—	—
Splenectomy	2	—	—	—
Exploratory laparotomy	—	3	6	—
Volvulus of cæcum	—	—	—	1
Aspiration of liver for liver abscess ...	10	—	—	—
Cholecystostomy and drainage of pancreatitis	1	—	—	—
Aspiration of ascites	—	16	—	—
Talma—Morrison operation	—	1	—	—
(2) Ano-Rectal:				
Excision of fistula in ano	8	—	—	—
Excision of hæmorrhoids	3	—	—	—
Injection of hæmorrhoids	2	—	—	—
Excision of epithelioma anus	1	—	—	—
Dilatation of rectal stricture	—	24	—	—
Sigmoidoscopy	—	3	12	—
(3). Ear, Nose and Throat:				
Excision of nasal polypus	4	—	—	—
Caldwell—Luc operation	1	—	—	—
Curettage of adenoids	1	—	—	—
Removal of foreign body in œsophagus ...	1	—	—	—
Œsophagoscopy	—	—	3	—
Bronchoscopy	—	—	6	—
(4) Eyes:				
Extraction of cataract	4	—	—	—
Iridectomy	—	4	—	—
Excision of eye ball	2	1	—	—
Excision of pterygium	2	—	—	—
(5) Genito Urinary:				
Cystoscopy	—	—	18	—
Urethroscopy	—	—	2	—
Excision of scrotum for elephantiasis ...	64	—	—	—
Excision of hypertrophied scrotum ...	14	—	—	—
Excision of epithelioma scrotum ...	1	—	—	—
Radical cure of hydrocele	159	—	—	—
Tapping and injection of hydrocele ...	3	—	2	—
Tapping of hydrocele	—	5	—	—
Suprapubic puncture of bladder ...	—	3	—	—
Suprapubic cystostomy for drainage of bladder	3	—	—	1
Closure of bladder fistula	1	—	—	—
Drainage for extravasation	—	—	—	3
Dilatation of stricture	—	144	—	—
Prostatectomy	—	—	—	1
Removal of vesical calculus	1	—	—	—
Transplantation of ureter	—	1	—	—
Urethrotomy	2	1	—	1
Plastic operation on urethra	—	—	1	—
Circumcision	9	—	—	—
Orchidectomy	3	—	—	—
For undescended testicle	1	—	—	—
(6) Gynæcological:				
Hysterectomy	9	—	—	1
Excision of uterine polypus	1	—	—	—
Curettage	7	—	—	—
Induction of labour	1	—	—	—
Cæsarean section	—	—	—	1
Excision of vulval elephantiasis	1	—	—	—
Gilliam's operation for retro-flexion ...	3	—	—	—
Excision of broad ligament cyst ...	1	—	—	—

OPERATIONS AT THE CONNAUGHT HOSPITAL—*continued.*

	Cured.	Relieved.	Unrelieved.	Died.
(6) *Gynæcological—continued:*				
Salpingo-oophorectomy	2	—	—	—
Cauterisation of cervix	1	—	—	—
Perineorrhaphy	1	—	1	—
Excision of elephantiasis of breast ...	2	—	—	—
Excision of caruncula	1	—	—	—
Repair of vesico-vaginal fistula	—	4	3	—
(7) *Head and Neck:*				
Excision of thyro-glossal cyst	1	—	—	—
Excision of epulis of jaw	3	—	—	—
Repair of hare-lip	—	1	1	—
Excision of mixed salivary tumours ...	3	—	—	—
Removal of salivary calculus	1	—	—	—
Resection of phrenic nerve	—	1	—	—
Thyroidectomy for goitre	2	—	—	2
Removal of thyroid adenoma	1	—	—	—
Meningocele	—	—	—	1
(8) *Miscellaneous:*				
Drainage of septic conditions	316	—	—	4
Excision of glands	4	—	—	—
Suture of wounds	255	—	—	—
Aspiration of pleura	4	—	—	—
Drainage of empyema...	4	—	—	—
Extraction of teeth	125	—	—	—
Excision of cysts	13	—	—	—
Blood transfusion	—	2	—	—
Resection of presacral nerve	—	1	—	—
Periarterial sympathectomy	—	3	—	—
(9) *Orthopædics:*				
Reduction of fractures and separated epiphyses	34	—	—	—
Reduction of dislocations	15	—	—	—
Open operation for fractures	2	—	—	—
Extension of fractures by means of pins ...	7	—	—	—
Bone grafting	2	—	—	—
Osteotomy of femur	1	—	—	—
Drainage and sequestrectomy for osteomyelitis	12	—	—	—
Excision of elbow joints	1	—	—	—
Excision of knee joints	1	—	—	—
Drainage of arthritis	1	—	—	—
Removal of foreign body in knee joint ...	1	—	—	—
Aspiration of joints	—	3	—	—
Breaking down of adhesions in joints ...	—	7	—	—
Tendon lengthening	—	2	—	—
Tendon transplantation	—	3	—	—
Tendon suture	2	—	—	—
Amputation of leg	2	—	—	1
,, toe	10	—	—	—
,, finger	13	—	—	—
Excision of scar contracture	1	—	—	—
(10) *Skin and Subcutaneous Tissues:*				
Excision of epitheliomata	1	—	—	—
Excision of sinuses	2	2	1	—
Excision of ulcers	15	—	—	—
Excision of elephantiasis leg	—	1	—	—
Skin grafting	31	—	—	—
Plastic operation	1	—	—	—
Removal of foreign bodies	23	—	—	—
Debridement of burns	1	—	—	—
Excision of non-malignant tumours ...	37	—	—	—
Total ...	1,581	237	55	21

NOTE.—(*a*) Dilatations of stricture of the urethra and rectum are placed under the heading "Relieved" in all cases.

(*b*) Diagnostic procedures such as cystoscopy and sigmoidoscopy are placed under the heading "Unrelieved."

OPERATIONS PERFORMED ON EUROPEANS.

	Cured	Relieved.	Unrelieved.	Died
Appendicectomy	4	—	—	—
Excision of simple tumours	1	—	—	—
Suture of wounds	2	—	—	—
Excision of cyst	1	—	—	—
Breaking down of adhesions in joints ...	1	—	—	—
Extraction of teeth	1	—	—	—
Drainage of maxillary antrum	—	1	—	—
Curettage for incomplete abortion ...	2	—	—	—
Drainage of septic conditions	2	—	—	—
Examination under anæsthesia	—	—	1	—
Pin extension for fractured femur ...	1	—	—	—
Urethroscopic examination	—	—	2	—
Total ...	15	1	3	—

Percentage of Deaths	1·1
Number of operations in 1926	26
„ „ „ „ 1927	257
„ „ „ „ 1928	755
„ „ „ „ 1929	761
„ „ „ „ 1930	1,566
„ „ „ „ 1931	1,410
„ „ „ „ 1932	1,913

Anæsthtics :

Spinal	536
Ethyl chloride	154
Chloroform	193
Local	141
Rectal	4
Intratracheal	1
Total	1,029

B—MATERNITY WARD—CONNAUGHT HOSPITAL.

During the first half of the year Dr. E. J. Wright was in charge of this ward, and Dr. Taylor-Cummings during the remaining period, the former Medical Officer having proceeded on leave.

There are only 12 beds in this ward and more accommodation to meet the present demand will soon be necessary.

Including ante-natal cases a total of 344 patients were admitted during the year; 240 were labour cases of which 94 were primiparæ. They gave birth to 253 children, the percentage of twin labours remaining high, there being 13 such, i.e. 6 per cent.

Of the 240 labour cases 66 were abnormal, and the following table shows the special features which rendered each case abnormal.

MATERNITY WARD TABLE OF ABNORMALITY, 1932.

Craniotomy.	Ante-partum Hæmorrhage.	Dead Born.	Stillborn.	Premature.	Forceps.	Breech.	Twins.	Hydramnios.	Eclampsia.	Premature Rupture of Membranes.	Occipito Posterior.	Locked Twins.
		5		5								
			6									
				12								
						14				14		
				16			16					
					37							
					43	43 (1)	43				43 (1)	
									56			
						63	63					
						72 (1)	72					
			77			77 (1)	77					77
			(1&2)				83					
		92			99							
			105									
					109				128			
						129						
		146					143					
						146						
						147 (1)	147					
		152										
					153							
						155 (1)	155					
					156							
						170 (1)	170		170			
						177						
							189					
					198						198	
208		211										
	215	215										
		217		215								
				218			219	219				
		227		223								
		233		227								
	236											
		238			238				238			
							240			239		

The numeral in brackets appended to the labour case number indicates that it refers to an abnormality in one child of a twin labour.

It will be seen from this table, that of the 253 children born in the hospital, 10 were dead-born and 4 stillborn, 2 of the latter a twin. The term dead-born is used only when it is certain as evidenced by maceration the child had not been lost in the birth.

16 children died after birth during the mothers stay in hospital.

There were 2 maternal deaths:—

(*a*) Case 5—Enteritis following amœbiasis; died ten days after delivery.

(*b*) Case 86—Parametritis and septicæmia; death from hyperpyrexia on the eleventh day of puerperium.

There were 104 complicated pregnancies admitted to the ward for the following reasons:—

Observation	18
Admitted during puerperium	6
False pains	21
Clinical malaria	2
M. T. malaria	2
Quartan malaria	1
Pyrexia	4
Bronchitis	3
Deficiency disease	5
Carried forward	62

Brought forward	62
Threatened abortion	3
Abortion (incomplete)	1
Abortion (complete)	7
Miscarriage (incomplete)	1
Miscarriage (compiete)	2
Ante-partem hæmorrhage (1 died)	2
Ascariasis	2
Albuminuria	7
Ante-partem eclampsia	1
Œdema legs	4
Pneumonia	1
Retention of urine	2
B. N. O.	1
Arthritis	1
Ulcers vulva	1
Local injury	2
G. C. infection	1
Acute mania	1
Toxæmia of pregnancy (1 died)	2
	104

E. J. WRIGHT,
Medical Officer.

C—REPORT ON INFANT WELFARE.

(*a*) Connaught Hospital and Campbell Street.

The three established clinics in the East, Central and West Wards of the town have continued to function throughout the year, and this report deals with the work done at the Central and West Ward Clinics. The former is held on Friday afternoons at the Connaught Hospital, and the latter on Monday and Wednesday mornings in the basement of a house at 99, Campbell Street.

For the first half of the year Dr. E. J. Wright was in charge, and Dr. E. Taylor-Cummings took over during his absence on leave.

The vacant post of Senior Health Visitor was filled this year by the appointment of Miss O. T. Metzger, who started duties in April and took over charge of the Central Ward of the town.

There were 806 new individuals under the age of three years admitted to these clinics during the year, an increase of 84 over last year's figure. The following Table 1 gives the ages at which the children were first brought to the clinics, and for easy comparison the figures for last year are placed alongside:—

	1931.	1932.
Under 1 week	1	27
„ 2 weeks	30	100
„ 1 month	128	159
1– 3 months	158	167
3– 6 months	125	94
6–12 months	105	113
1– 2 years	107	116
2– 3 years	68	30
	722	806

This table is instructive, for it shows clearly the increase in attendance during the first month of life which is very desirable in order to improve results, and also is a real indication of appreciation of the clinics and work being done in the districts.

The following Table II shows the number of monthly attendances at each clinic during the year.

TABLE II.

INFANT WELFARE CLINICS—RECORD OF ATTENDANCES, JANUARY–DECEMBER, 1932.

Connaught Hospital.				Campbell Street.			
Date.	Old Cases.	New Cases.	Total.	Date.	Old Cases.	New Cases.	Total.
January	251	33	284	January ...	349	34	383
February ...	229	16	245	February ...	444	42	486
March	172	14	186	March	380	30	410
April	269	35	304	April	394	42	436
May	256	36	292	May	449	56	505
June	191	29	220	June	436	38	474
July	343	50	393	July	422	36	458
August	363	45	408	August ...	532	34	566
September ...	455	49	504	September ...	479	44	523
October	358	27	385	October ...	589	23	612
November ...	406	27	433	November ...	506	24	530
December ...	235	36	271	December ...	383	32	415
Total	3,528	397	3,925	Total ...	5,363	435	5,798

Total—New individuals ... 832
Number of attendances 9,723

N.B.—This table, compiled from month to month, contains 26 more new individuals than actually attended, as it was only possible to eliminate double entries on surveying the complete year's work.

These figures when compared with last year show an increase of 65 new individuals and a total of 2,657 attendances. The extra numbers are probably the result of the work done by the additional Health Visitor.

Of the total new cases for the year 106 were villagers, and this shows an increase of 37 over last year's figure.

Table III shows the record of visits done by the District Health Visitors in the Central and West Wards throughout the year.

TABLE III.

Infant Welfare—Return of Visits of Health Visitors, January to December, 1932.

Date.	Newly Born.	New Cases.	Repeated Visits.
January	42	58	150
February	34	47	162
March	41	28	130
April	32	74	131
May	65	126	333
June	61	83	321
July	74	54	408
August	71	35	445
September	49	29	472
October	53	37	375
November	53	25	378
December	56	27	345
Total	631	623	3,650

There were 1,276 births registered in the Freetown area with 348 infantile deaths (under twelve months of age), which gave an infant mortality rate of 272 for Freetown for the year. When it is remembered that there is a direct relation between prosperity and

infantile mortality, even this small reduction is gratifying. For comparison the infant mortality for the last five years is given below.

Year.	Births Registered.	Deaths under Twelve Months.	Infant Mortality Rate.
1928	1,036	377	364
1929	1,093	349	319
1930	1,102	371	336
1931	1,263	363	289
1932	1,276	348	272

E. J. WRIGHT,
Medical Officer, Infant Welfare Clinic.

(*b*) PRINCESS CHRISTIAN MISSION HOSPITAL.

The following table gives the total of all visits paid by the Health Visitor in 1932:—

Months.	Number of Visits paid to New-born Babies.	Number of Return Visits.
January	31	—
February	52	218
March	40	238
April	53	268
May	31	317
June	34	277
July	33	281
August	41	269
September	24	298
October	33	304
November	24	278
December	36	250
Total	432	2,998

D—ANTE-NATAL CLINIC—CAMPBELL STREET CENTRE.

This clinic was held weekly on Tuesday mornings at 99, Campbell Street throughout the year and was attended by women from the town and adjacent villages; a number of these subsequently gave birth at the Hospital Maternity Ward.

There were 483 individuals registered during the year and of this number 404 were pregnant.

The following table shows the attendances month by month:—

Ante-Natal Clinic—Record of Attendances, January–December, 1932.

Month.	New Cases.	Repeated Visits.	Total.
January	37	204	241
February	30	194	224
March	42	230	272
April	32	171	203
May	54	244	298
June	35	207	242
July	30	206	236
August	48	219	267
September	45	203	248
October	39	224	263
November	54	231	285
December	37	193	230
Total ...	483	2,526	3,009

Of the 404 pregnant women 263 were multi-gravidæ and 141 primiparæ; 100 of the total cases eventually gave birth in the maternity ward where there were 240 deliveries for the year. This figure is practically the same as for last year which showed 106 ante-natal patients out of 251 deliveries.

E. J. WRIGHT,
Medical Officer.

E—A REPORT ON SOME INVESTIGATIONS CARRIED OUT BY THE SIR ALFRED LEWIS JONES RESEARCH LABORATORY.

(*a*) A Survey of the Househaunting Mosquitoes of Freetown and Kissy.

Freetown has usually been regarded as a highly malarious town abounding in anophelines, and examinations of the school children have supported this view by showing a high proportion infected with malaria, but no recent information has been available as to the number of anophelines to be found. During the wet seasons of 1930 and 1931 a survey of the househaunting mosquitoes was carried out by the Sir Alfred Lewis Jones Research Laboratory in that portion of Freetown drained by Sander's Brook, the area being approximately bounded by Sanders Street, Campbell Street, Fort Street and Percival Street. A control survey was also made in Kissy, commencing in October, 1930, and being continued throughout the year until October, 1931. A number of different houses were visited daily between the hours of 7 and 9 a.m., and those rooms which had been occupied during the previous night were searched for mosquitoes. The results of this survey have already been published elsewhere in detail (Gordon, Hicks, Davey and Watson, 1932), and it is proposed here only to record the findings shortly.

Species and Numbers of Anophelini captured.—In Freetown the only species occurring in appreciable numbers in the houses was *A. costalis* (a very few *A. funestus* were also taken), while in Kissy both species appeared to be equally numerous. In addition, in this latter locality, there were captured specimens of *A. nili*, *A. rhodesiensis* and *A. rufipes*, though these were present only in negligible numbers. A great difference existed in the concentration of anophelines in the two districts, the rate per room in Freetown being 0·4 (3,005 rooms examined), and in Kissy, at a similar season of the year, 6·8 (582 rooms examined). In this respect Kissy presents a similar state of affairs to other West African villages, while Freetown has a far lower concentration of anophelines than have the only two similar large towns on the West Coast from which comparable figures are available. The monthly incidence of anophelines showed a very close association with the rainfall, and reached, at the height of the rains, a maximum of 1 per room in Freetown, and of 23 per room in Kissy. It was also found that the rise in the *A. costalis* rate in Kissy ante-dated that of *A. funestus* by some two months. During the dry season anophelines were so rare in Freetown, probably not exceeding 0·02 per room, that adequate figures could not have been obtanied without a considerable increase in the time and labour involved, but in Kissy during the same season averaged 1·1 per room.

A small number of estimations of the outdoor biting anophelines in Freetown confirmed their low incidence in houses, and yielded in 500 " boy hours " 2 *A. costalis* and 1 *A. theileri*. In Kissy it was noted, however, that *A. mauritianus* and *A. theileri* were commonly taken biting out of doors, whereas amongst 4,000 anophelines captured in the houses not a single specimen of either of those species was observed.

Species and numbers of Culicini captured.—As is usual throughout West Africa, there was a great preponderance of anophelines over culicines in both districts, the culicine concentration being very low in native houses during the hours they were examined. The following species were captured: *Culex annulioris, C. annulioris* var *consimilis, C. (Culiciomyia) cinereus, C. decens, C. decens* var *invidiosus, C. duttoni, C. horridus, C. nebulosus, C. rima, C. thalassius, Aedes (Stegomyia) fasciata, Tæniorrhynchus (Mansonioides) africanus, Lutzia tigribes* var *fusca, Aedes (Acdomorphus) sp.* It was noted, however, that the culicini caught in native houses in the early hours of the morning were not representative, either as regards species or numbers, of the total culicines which had entered the house during the previous twenty-four hours.

Yellow fever has not been reported from Sierra Leone for more than ten years, although adjacent territories have not been so fortunate. When an estimation was made of the non-vectors and of the potential yellow fever carrying culiciui captured in houses, it was found that the proportion of the latter to the former was similar to that recorded in other West African colonies, but that, owing to the general paucity of culicines, the actual numbers found were very small, namely 1·3 per 1,000 rooms in Freetown, and 8·6 in Kissy, as compared with, for example, 380 per 1,000 rooms in Lagos. In the outdoor biting experiments it was noted that in Freetown a greater, though not large, number of potential yellow fever vectors may be taken biting out of doors than will be found in a search of the houses in the early morning. Further, the proportion of potential carriers of this disease amongst the mosquitoes captured in the open, proved to be higher in Freetown than in Kissy where outdoor biters were four times as numerous. The species of culicines collected in these outdoor biting experiments were: *Aedes (Stegomyia) africana, S. fasciata, S. luteocephala, S. vittata, Culex (Culiciomyia) cinereus, C. decens* var *invidiosus, C. thalassius, Tæniorrhynchus (Mansonioides) uniformis.* It would be extremely unwise to ascribe the freedom from yellow fever enjoyed by Freetown to the scarcity of vectors, but the figures quoted above suggest the importance of estimating the numbers of adult mosquitoes, rather than placing reliance on the results of larval surveys.

The Experimental Infection of A. Costalis and A. Funestus with Malaria and Filaria.—All attempts to infect either species with P. malariæ have failed, while *P. vivax* was found to be too rare to supply donors for infection experiments. *A. costalis* has already been proved capable of infection with *P. falciparum*, but experimental infection of *A. funestus* has not previously been recorded. Three out of fifty bred *A. funestus* fed on crescent carriers showed sporozoites in their salivary glands on subsequent dissection. Both species of anopheline were proved capable of infection with *W. bancrofti* as far as the infective stage, i.e. proboscis form (Hicks, 1932).

Results obtained on Dissection of Anophelines from Freetown and Kissy.—In Tables I and II below are recorded the natural malaria and filaria infection rates of the anophelines captured.

TABLE I.

Showing the results of dissection for malaria and the sites of infection amongst 1,164 anophelines captured in houses in Freetown, and 2,103 anophelines captured in houses in Kissy.

—	Freetown.				Kissy.			
Species.	Total examined.	Percentage infected all forms.	Percentage infected in gut only.	Percentage infected in glands.	Total examined.	Percentage infected all forms.	Percentage infected in gut only.	Percentage infected in glands.
A. costalis	1,156	11·1	3·2	8·0	1,157	16·3	5·2	11·2
A. funestus	8	12·5	12·5	0	908	7·0	2·9	4·1
A. nili ...	...	...	...	...	22	27·2	18·2	9·1
A. rhodesiensis	...	...	...	...	16	0	0	0
All species	1,164	11·1	3·2	8·0	2,103	12·3	4·3	8·0

TABLE II.

Showing the results of dissection for filaria and the sites of infection amongst 1,164 anophelines captured in houses in Freetown, and 2,103 anophelines captured in houses in Kissy.

—	—	Freetown.					—	Kissy.				
—		Percentage Positive in						Percentage Positive in				
Species.	Total examined.	All Forms.	Thorax.	Head.	Proboscis.	Head and/or Proboscis.	Total examined.	All Forms.	Thorax.	Head.	Pro boscis.	Head and/or Proboscis.
A. costalis ...	1,156	5·1	4·0	0·3	0·7	1·0	1,157	14·6	11·9	1·2	1·5	2·7
A. funestus	8	25·0	25·0	0	0	0	908	8·0	6·8	0·3	0·8	1·2
A. nili ...	...	...	...	...	...	...	22	4·5	4·5	0	0	0
A. rhodesiensis ...	...	...	...	...	...	...	16	0	0	0	0	0
All species ...	1,164	5·2	4·2	0·3	0·7	1·0	2,103	11·5	9·5	0·8	1·0	2·0

The malaria and filaria infection rates of *A. costalis* are high, but the lower infectivity of *A. funestus* in Kissy is in part compensated by the greater concentration of this species in houses. *A. nili* in Kissy also showed a high incidence of infection with malaria but its rarity renders its importance negligible. In both areas the malaria infection rate amongst anophelines maintained approximately the same level in the wet and dry seasons, but the filaria rate was much higher in the wet than the dry season. This is probably due to the relatively low humidity in the latter season being prejudicial to the development of the filaria in the anopheline host.

The relative ages of the anophelines dissected were estimated by Perry's (1912) method, and it was found that old anophelines predominated during the dry season and young anophelines during the rains. During the dry season little breeding went on, but it was sufficient to maintain a constant though small supply of young mosquitoes in the houses; with the advent of the rains, however, the emergence of young anophelines was so rapidly

augmented that soon they completely outnumbered the previously predominant old forms. It was also noted that a steadily increasing percentage of malaria infection occurred in each successive age group, but that this was not equally true of filaria infection. The great majority of anophelines infected with malaria and filaria were in the second age group, since this, though not the most intensely infected group, contained a very much larger number of anophelines than the groups showing a higher incidence of infection.

Observations on the Dispersion of Anophelines from Native Houses.—A number of diffusion experiments were carried out, and it was observed that the great majority of anophelines left a native house within twenty-four hours of having fed; there appeared to be no return habit. On the basis of the facts collected regarding the age, infection rate, dispersion, and feeding habits, etc., of the two species, *A. costalis* and *A. funestus*, it is surmised that an almost complete change-over of the anopheline population of each house occurs every twenty-four hours. In corroboration of this, it was found impossible to demonstrate any association between the number of native children (gametocyte carriers) and the infection rate amongst anophelines in a house or district. Finally, a comparison was made between well-lighted and badly-lighted houses in Freetown, and it was found that a higher proportion of the latter contained anophelines, and that in such houses the anopheline concentration was almost four times as great as in well-lighted houses in the same vicinity. It is more than possible, however, that this does not indicate that fewer anophelines enter well-ventilated houses, but rather that they leave them at an earlier hour. It is suggested that improved housing has little direct bearing on the number of mosquitoes found in houses—a matter which appears to depend on the amount of illumination, and therefore primarily on the habits of the people.

Observations on the Results of Ante-mosquito Measures in Freetown.—Ante-mosquito work may be said to have commenced in Freetown in 1899 when Sir Ronald Ross visited the Colony. Between the years 1899 and 1905 five reports were written concerning the progress of sanitary measures, and from these some conception may be formed of the condition of Freetown in those days. The central portion of the town surrounding Tower Hill, being naturally well-drained, had few anopheline breeding places, but the streets of the flat eastern and western portions being formed of the natural laterite rock, unpaved, generally undrained, and their surfaces weathered into cavities, afforded innumerable opportunities for mosquitoes breeding. The streams and springs flowing through the town were uncanalized, and the compounds contained twenty or thirty years accumulation of bottles, tins, pots, and other refuse, while in most cases each house had its own cesspit. Under these conditions mosquitoes flourished both in the wet and dry seasons. As a result of their investigations Ross, Annett and Austen (1900), and Stephens and Christophers (1900) suggested that a vigorous and sustained attack should be made on mosquito larvæ by drainage, levelling street surfaces, removal of rubbish, and other sanitary measures. This work was commenced in July, 1901, and within a few months Ross (1901) was informed "..... already your efforts have been crowned with a large degree of success, as there has been a noteworthy dimunition in the numbers of the first two genera (*Anopheles* and *Stegomyia*) found in the houses. The number of breeding grounds has been enormously diminished." In 1905 Boyce, Evans and Clarke found that many of the measures undertaken had been carried out unsatisfactorily, and that no attempt had been made to deal with the streams; they made a number of further recommendations.

Since that time anti-mosquito work, both permanent and temporary, has been going on steadily, and in 1930 the permanent canalization of Sander's Brook was commenced. It is unfortunate that in the reports of the early mosquito surveys few actual figures were quoted, so that it is impossible for us accurately to compare the present condition of Freetown in this respect with its condition at the beginning of the century. It is, however, clear that a great reduction has occurred in the numbers of breeding places and of anophelines in the houses. The larval indices quoted in the annual reports of the Medical and Sanitary Department show, since 1911, a steady diminution in the number of compounds found to contain mosquito larvæ. Some idea may be formed of the decrease in the number of adult anophelines by referring to the comparison already drawn between Kissy (which at the present time closely approximates to the Freetown of the early descriptions quoted above) and Freetown in 1930–1931, where a striking difference is demonstrated. Further, a portion of the area recently surveyed was also examined in 1899–1900 by Stephens and Christophers, who stated that numerous anophelines could be found there in the dry season, in some cases more than 50 per house, while in 1930–1931 no anophelines were found in the dry season and few during the rains.

The Effect of Drainage on the Incidence of Adult Anophelines.—During the recent investigation an attempt was made accurately to estimate the effect of drainage on the anopheline population, but it was impossible to produce comprehensive figures owing to the abandonment of the drainage scheme. A number of streets, however, were suitable for comparison, and in Table III below are shown the anopheline rates per room in 1930 and 1931 in streets in which drains were constructed following our examination in 1930

and completed before the re-examination in 1931, compared with the anopheline incidence in a number of control streets in which no drainage operations were undertaken. Before considering these figures it is necessary to draw attention to the fact that a marked rise in anopheline incidence was noted throughout the whole area under survey in the year 1931 as compared with 1930.

TABLE III.

Showing the anopheline rate per room in (A) streets in which no drainage operations were carried out in 1930 or 1931, (B) streets in which drains were constructed in 1930.

——		1930.			1931.			Ratio 1931 to 1930, i. e. *Column 8* / *Column 5*.
Column 1.	2	3	4	5	6	7	8	
——	Number of Streets examined.	Number of Rooms searched	Total Anopheline caught.	Anopheline Rate per Room.	Number of Rooms searched.	Total Anopheline caught.	Anopheline Rate per Room.	
A.—Streets in which no drainage operations were carried out in 1930 and 1931.	13	535	122	0·23	570	360	0·63	2·74
B.—Streets in which drains were constructed in 1930.	6	182	159	0·87	186	89	0·48	0·55

The figures quoted in the above table are small, but a comparison of the 1931 : 1930 ratios in the two sets of streets indicates a remarkable change in the streets in which drains had been constructed. The anopheline concentration is shown to be 2·74 times greater in 1931 than in 1930 in those streets in which no drainage operations were carried out, while in the six streets drained after the first and before the second examination, no increase was observed, but on the contrary, a fall to almost half of the previous year's figure. Due allowance must, however, be made for factors affecting the accuracy of this observation, such as the small number of streets, and the fact that mosquito breeding is liable to be unevenly increased during constructional work.

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Stephens, J. W. W., and Christophers, S. R. (1900).—Distribution of Anopheles in Sierra Leone. Pts. I–II. *Rep. Mal. Comm. Roy. Soc., 42.*

(*b*) Schistosomiasis in Freetown.

In March, 1932, Dr. C. B. Jennings informed this Laboratory that he had recently observed three children suffering from Bilharzia (*S. hæmatobium*) infection, who, so far as their history was procurable, had never been outside the vicinity of Freetown. This observation appeared to be worthy of closer investigation, for, so far as is known, no record exists of a locally acquired infection, nor has the snail vector been recorded from any of the Freetown streams. The parents of the infected children were again questioned, and they still maintained that the children had never left Freetown. Such statements are, however, frequently unreliable, and the possibility remains that the children may have acquired the infection elsewhere, though the ages of two of them being only two, and two-and-a-half years, respectively, lend support to the parents' statement. The children were living at Congo Town, Brookfields and Waterloo Street, and as the nearest stream to these three districts is the Congo River, this was very carefully searched for snail vectors in March and May, and again in November, since *P. globosa*, the vector, is sometimes absent during the dry season in localities where it exists during the rains. On none of these occasions were any snails found likely to be vectors. As Ascension Town was approximately central to the houses of the infected children, it was thought advisable to examine a number of children from that district. Specimens of urine were obtained from one hundred and thirty-two children at St. Anthony's School, twenty cubic centimetres being centrifuged and examined. Only three specimens yielded positive results, and on investigation it was found that all three had been born in the Protectorate in districts where schistosomiasis was known to be very prevalent.

(*c*) Results of Kahn Tests.

During the year reports of 80 Kahn tests have been furnished to medical officers, 47 (59 per cent.) of these sera being positive, and 33 (41 per cent.) negative. This high proportion of positive results must not, however, be regarded as representing the incidence of yaws and syphilis in the population generally, for the specimens were mainly obtained from cases where the presence of one or other of these diseases was suspected.

(*d*) Two Cases of Animal Rabies.

There appears to be no previous record of the occurrence of rabies in Sierra Leone, in spite of the fact that numerous cases have been reported from French Guinea.

Case 1. In February, 1932, two Europeans in Freetown, together with their native servants, were bitten by a cat showing signs of rabies. Sections of the animal's brain showed the presence of Negri bodies in the ganglion cells.

Case 2. In December, 1932, the brain of a dog from Mano was examined, which had bitten four natives before it could be killed. Negri bodies were demonstrated in sections of the brain, and the disease transferred successfully to guinea-pigs. The infection of these guinea-pigs is of some interest since the virus survived a 36-hours' journey in the hottest season of the year.

F—METEOROLOGICAL OBSERVATIONS—(TOWER HILL OBSERVATORY).

—	Month.	Mean Pressure.	Air Temperature.						Relative Humidity 9 a.m.	Rainfall.			
			9 a.m.	Mean.	Means of Absolute.					Total.	Maximum.	Date.	Number of Days Rain.
					Minimum.	Maximum.	Minimum.	Maximum.					
Latitude 8° 27′ N.		″	°		°	°	°	°	%	″	″		
Longitude 13° 9′ W.	January ...	29·929	77·6	79·4	72·9	85·9	67	91	66·9	1·05	1·05	1st	1
Height above M.S.L.	February ...	29·932	80·3	81·0	75·4	86·5	71	89	82·8	3·74	2·40	25th	3
Barometer Cistern 224 feet	March	29·935	81·3	81·6	75·3	87·8	72	91	78·2	1·29	0·77	6th	5
Site of Rain Gauge 115 feet	April	29·906	81·5	81·1	74·3	87·8	70	90	74 3	8·71	1·93	18th	12
	May	29·949	80·4	80·4	74·6	86·3	71	91	82·8	7·62	2·12	26th	25
	June	29·963	79·8	78·9	72·8	85·1	69	89	83	20·56	5·80	12th	20
	July	29·968	76·5	76·7	72·2	81·3	69	87	92·5	31·99	5·93	8th	24
	August	29·967	76·6	76·7	72·6	80·9	68	85	88·8	16·06	2·88	26th	23
	September ...	29·971	77·1	77·5	72·6	82·4	71	87	89·1	23·84	4·67	3rd	28
	October ...	29·943	80	79·3	73·2	85·5	70	88	83	8·23	1·65	19th	23
	November ...	29·924	80·5	80·0	73·6	86·5	69	89	80·7	6·67	1·10	19th	17
	December ...	29·904	79·2	79·9	74·1	85·7	69	88	85·4	2·54	1·39	4th	4
	YEAR	29·941	79·2	79·4	73·6	85·1	69·7	88·7	82·3	132·30	5·95	8th July	185

G—TABLES SHOWING SMALLPOX CASES NOTIFIED IN SIERRA LEONE DURING THE YEAR 1932.

A.

District	Feb., 20.	March, 5.	March, 19.	April, 2.	April, 16.	April, 30.	May, 14.	May, 28.	June, 11.	June, 25.	July. 9.	July, 23.	Aug., 6.	Aug., 20.	Sept., 3.	Sept., 17.	Oct., 15.	Oct., 29.	Nov., 12.	Nov., 26.	Dec., 10.	Dec., 24.	District Totals.
Colony :																							
Headquarters Judicial																							
District ...	1	...	3	...	1	1 (1)	1	1	...	...	...	...	...	...	...	...	...	...	..	...	...	...	8
Freetown ...	...	3	...	...	5	5	2	..	1	...	1	...	...	...	2	...	...	...	...	...	...	...	19
Protectorate :																							
Port Loko	...	5	33 (1)	...	21	12 (1)	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	75
Kambia ...	...	...	17 (1)	49	. .	163	183 (1)	63	7	...	2	25 (2)	...	...	...	...	...	...	...	...	...	...	509
Karene ..	...	...	1	7	61	79 (2)	...	...	...	3	...	...	...	22	...	...	1	...	...	...	...	...	174
Bombali ...	...	...	8	6	10	4	...	...	3	17 (1)	29 (1)	...	...	1	3	4 (1)	...	...	...	2	3	...	90
Kailahun ...	...	...	...	32 (3)	3 (1)	22 (1)	1	...	...	5	4	19 (1)	5	...	9 (2)	...	...	...	...	...	...	...	100
Bo ...	...	...	...	3	...	..	...	...	...	...	2	...	1	...	...	...	...	...	...	.	...	...	6
Kenema ...	...	...	...	...	. .	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5
Moyamba...	...	...	...	..	...	...	...	...	...	1	...	...	...	...	...	...	...	...	..	...	3	...	4
Koinadugu	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	7	...	8
Fortnightly Totals ...	1	8	62 (2)	97 (3)	101 (1)	291 (5)	191 (1)	64	11	26 (1)	38 (1)	44 (3)	6	23	14 (2)	4 (1)	1	...	...	3	13	...	998 (20)
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	. .	...	...	...	...	...	...

The small figures in brackets indicate deaths notified from Smallpox. Case mortality, 2 per cent.

This table is an accurate compilation from the fortnightly Bulletins of Infections Diseases which include imported cases.

B—VACCINATIONS PERFORMED IN SIERRA LEONE DURING THE YEAR 1932.

Area.	District.	Number of Vaccinations.
Colony	Headquarter Judicial	8,883
,, ...	Freetown	82,618
,, ...	Bonthe	6,210
Protectorate, Northern Province	Port Loko	36,998
,, ...	Kambia	25,934
,, ...	Karene	5,363
,, ...	Bombali	15,420
,, ...	Koinadugu	3,070
,, Southern Province	Moyamba	12,477
,, ...	Bo	10,250
,, ...	Kenema	6,332
,, ...	Kailahun	36,469
,, ...	Kono	5,325
,, ...	Pujehun	10,798
Total	—	266,147

SIERRA LEONE.

SIERRA LEONE SURVEY.

Scale $\frac{1}{2,000,000}$ or 31·564 Miles to 1in.

10 0 10 20 30 40 50 Miles.

Provincial Boundaries shewn	
District " "	
Sierra Leone Government Railway	S.L.R.
Motor Roads	
Motor Roads under construction	
Ports	■
District Head Quarters	H.Q
Health Areas	Ⓟ

The Colony comprises the Peninsular area including Freetown, Waterloo, Songo, Kent and York.

I—SANITARY FORMS.

(*a*) Daily Report Forms.

Date..... .. TOWN.....

Labour—(*a*) Government.....

(*b*) Chief's..... .. ..

Sanitary Inspector.

"A" Compound Inspection.

Address and Name of Occupier.	Cesspit or Latrine.		Mosquito Larvæ and Receptacle in which found.	Barrels. Tubs, etc.		Condition of Compound whether Notice is required and what for e.g. R.T.B. weed, etc.	Mosquito Larvæ in		Well, if any, and if conforming to Rule 39.
	In Order.	Out of Order.		M.P.	Non M.P.		Trees.	Canoes.	
	(Rule 30.)		(Rule 37.)	(Rule 36.)		(Rules, 12, 28.)	(Rule 65.)		

P.H.(P.) O., 1926, Section 7. "B" Service of Notices and Re-Inspection of Nuisances.

1. No. of Notice.	2. On Whom Served.	3. Date Served.	4. Nuisance.	5 No. of Days	6. Date Re-inspected.	7. If Complied or not.

"C" Record of Oiling and Clearing.

No. of Pools oiled.	No. of Pools filled.	No. of Watery Cesspit oiled	No. of Gutters oiled.	No. of Men employed.	Length of gutter weeded.	Area of Bush cleared around the Town.	Area of Bush cleared around: 1 Water Supply, 2 Wash Place, 3 Barri.—(Rule 22.)	No. of Men employed.

"D"

REFUSE DISPOSAL.—(Rules 27 and 28).

No. of Dustbins cleared — No. of Dumps cleared (Rule 28).

No. of Incinerators working. — No. of Men employed.

SLAUGHTERHOUSE.—Condition and surroundings (Rule 41).

Meat seized for M.O.'s Inspection (Rule 42).

MARKETS.—(Section 6. para. 6. P.H.(P.) O., (1926). Condition and surroundings (Rule 40)

Foodstuffs seized.

VACCINATIONS.—No. done (Rules 60 and 61). No. of recent vaccinations seen { Successful / Unsuccessful }

Cases of infectious diseases seen and action taken. Rules, Part VIII.

LABOUR.—How distributed.

"E" General Report.

....

Sanitary Inspector.

(*b*) Monthly Report on Health District.

Month..... .....District.....Sanitary Inspector..... ....

Roads and Streets.

Rules 14, 17. Streets not in accordance with P.H. (Prot.) O., 1926
Rule 2. Number of pools of water Number oiled..... Number filled.....
Rule 2. Number of new drains cut or laid and type
Action taken

Houses.

Number of houses in town and general condition
Rule 7. Height of floors, above ground, covered by eaves inches.

Rule 11. Number of ruined and dilapidated houses
Rules 5, 6, 18. Number of new houses under construction
Rule 8. Distance of eaves from eaves of next house
Action taken

Borrow Pits.

Rules 19, 20. Number and position of new borrow pits
Pits not in accordance with Rules
Action taken on above

Bush.

Rule 21. Width of belt between town and high bush yards
Area cleared during month
Rule 23. Around (*a*) Washing place sq. yards
„ (*b*) Watering place (cattle) sq. yards
Rule 26. „ (*c*) Ferry or ford sq. yards
Ruls 22. „ (*d*) Cattle barri and bush sq. yards
Rule 25. Condition of streets with reference to weeds and bush
Number weeded during month.....Number remaining
Action taken

Refuse Disposal.

Rule 27. Number and condition of public dustbins
Number and condition of incinerators and if working
Rule 28*b*. Number and condition of refuse dumps
Action taken

Water Supply—(contd.)—(Wells, Rule 39).

Whether protected and how
Number of wells in town—(*a*) authorized
(*b*) unauthorized
Action taken

Slaughterhouse.

Rules 40, 41. Position, type and condition of slaughterhouse and surroundings
Number of animals slaughtered during month

Markets and Food.

Rule 40. Number and condition of declared markets
Rule 42. If meat was diseased, state disease and action taken
Number and condition of meat-stalls not in public markets
Other action taken

Animals.

Number of domestic animals (other than dogs and cats) in town :
Rule 44. Horses Cattle Sheep Pigs Goats

Rules 43, 48. Where kept (Distance from nearest house or building).....yds
Rules 45, 48. If stable, barri or sty is dilapidated
Rule 48(*d*). Presence of flies and smell
Action taken
Position and condition of clearing for cattle in transit

Diseases of Animals.

Rule 47. Number of animals reported to have died during month
Number of sick animals seen and date
Symptoms of disease in animals seen
Symptoms of disease reported by local cattle dealers

Rule 47 (*a*). Action taken
Average number of cattle in the town
Rule 48 (*e*). Number of declared cattle towns and fakais near the town

Burials.

Rule 49 58. Number, position and condition of approved cemeteries

Latrines and Cesspits.

Rule 30.	Number and condition of public latrines
Rule 30.	Type and situation of public latrines
Rule 30.	If none, state why
	Number within 20 feet of houses or kitchens
Rule 29.	Number of cesspits
	,, ,, within 20 feet of houses or kitchens
	Action taken

Water Supply.

Rule 35, 38.	State whether pool, stream, well, or spring
	Distance from—(1) nearest house yards.
	(2) nearest latrine or cesspit yards.
	(3) nearest cultivated land yards.
	(4) area debushed sq. yards.

*Number of burials *outside* cemeteries.....

Infectious Diseases.

	Name of disease seen and date				
	Number of cases during month				
	Number of contacts during month				
Rule 59	How D.C., M.O., S.A., was informed and date (verbally, messenger, telegram)=V., M. or T.				
Rules 60., 64.	Action taken before arrival of M.O.				
	Action taken after arrival of M.O.				

Vaccinations.

Number performed (during month), i.e. totals of daily reports
Number seen (during month) Number successful
,, unsuccessful
,, not seen

*If any, a full report on the circumstances must be made overleaf.

COURT CASES DURING MONTH.

Number of Notice.	Name of Defendant.	Town.	Nuisance.	Court: District Commissioner or Paramount Chief.	Result and Penalty.

Notices.—Number served during month
Number re-inspected during month
Number of nuisances abated
Number of applications for summonses

GENERAL REPORT ON TOWN.

Sanitary Inspectors.

(*c*) Weekly Return of Vaccination.

OF.....193 .

PLACE.	Total Number Vaccinated.	Successful.	Unsuccessful.	Not Seen.	Remarks.
General Total ...					

.....

Vaccinator.

Sanitary Form No. 29.

(*d*) Summary of Vaccinations done during the Month.

.....DISTRICT.

Vaccine Reference No.	Number of Vaccination.	NAME.	Age.	Sex.	Town or Village.	Residence.	Previous Marks.	Date of Vaccination.	Date of Inspection.	Result of Inspection.		Not seen.
										Successful Marks. 4 3 2 1	Unsuccessful.	

.....*193*

.....

Vaccinator.

Sanitary Form No. 28.

(*e*) Prosecutions—Sanitary Department.

Place..... *District*..... *for month ending*.....*19*

Nature of Complaint	Number Remaining from last month.	Summonses Granted this Month.	Total.	Number Judged this Month.	Number Remaining for next Month.	Number Dismissed or Withdrawn.	Number Cautioned.	Number Fined or Imprisoned.	Total Fines. £	*s.*	*d.*	Average Fine per Case Found Guilty. £	*s.*	*d.*	Remarks (Number imprisoned, heavy fine, Reasons for Withdrawal and Dismissal, etc.)
Mosquito larvæ ...															
Accumulation or deposit															
Re Infectious disease ...															
Unsound food ..															
High grass and weeds ...															
Sanitary compound ...															
Total or Average ...															

.....*193* .

.....
Medical Officer of Health.

Sanitary Form No. 9.